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SIXTEENTH BIENNIAL REPORT

OF THE

Oregon State Highway
Commission

1943-1944

SIXTEENTH BIENNIAL REPORT

FOR 1941

Oregon State Highway Commission

E. A. Collier



OFFICE OF THE COMMISSIONER
1000 NE OREGON STREET
PORTLAND, OREGON

OREGON STATE HIGHWAY COMMISSION

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ARTHUR W. BROWN, Secretary
JAMES C. BROWN, Treasurer

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C. E. BROWN, State Highway Surveyor
J. E. BROWN, State Highway Inspector

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SIXTEENTH BIENNIAL REPORT

OF THE

Oregon State Highway Commission

For the Period July 1, 1942, to June 30, 1944



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SANTIAM HIGHWAY THROUGH CASCADE RANGE SHOWING BLUE LAKE
AND MT. WASHINGTON, JEFFERSON COUNTY

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E. J. Adams, Eugene, Feb. 28, 1917, to Mar. 31, 1918.
W. L. Thompson, Pendleton, Feb. 28, 1917, to Oct. 15, 1919.
S. Benson, Portland, Feb. 28, 1917, to Nov. 15, 1920.
R. A. Booth, Eugene, April 1, 1918, to May 28, 1923.
J. N. Burgess, Pendleton, Oct. 16, 1919, to Nov. 21, 1919.
E. E. Kiddle, Island City, Nov. 26, 1919, to Dec. 28, 1920.
J. B. Yeon, Portland, Nov. 22, 1920, to Mar. 31, 1923.
W. B. Barratt, Heppner, Jan. 8, 1921, to Mar. 27, 1923.
Wm. Duby, Baker, March 27, 1923, to July 31, 1927.
H. B. Van Duzer, Portland, April 1, 1923, to October 7, 1931.
W. H. Malone, Corvallis, May 28, 1923, to March 31, 1927.
C. E. Gates, Medford, April 1, 1927, to March 11, 1931.
Robert W. Sawyer, Bend, August 1, 1927, to May 28, 1930.
M. A. Lynch, Redmond, May 29, 1930, to August 1, 1931.
Chas. K. Spaulding, Salem, March 11, 1931, to Feb. 16, 1932.
Wm. Hanley, Burns, August 1, 1931, to February 16, 1932.
J. C. Ainsworth, Portland, Oct. 8, 1931, to Feb. 16, 1932.
Leslie M. Scott, Portland, Feb. 17, 1932, to March 31, 1935.
Carl G. Washburne, Eugene, Feb. 17, 1932, to Oct. 9, 1935.
E. B. Aldrich, Pendleton, Feb. 17, 1932, to March 31, 1940.
F. L. Tou Velle, Jacksonville, Oct. 9, 1935, to March 31, 1939.
Henry F. Cabell, Portland, April 1, 1935, to Feb. 28, 1943.
Huron W. Clough, Canyonville, April 1, 1939, to April 7, 1943.
Herman Oliver, John Day, April 1, 1940, to March 31, 1943.

Present Members

T. H. Banfield, Portland, appointed February 28, 1943.
Arthur W. Schaupp, Klamath Falls, appointed April 1, 1943.
Merle R. Chessman, Astoria, appointed April 8, 1943.

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LETTER OF TRANSMITTAL

Salem, Oregon,
January 1, 1945.

HONORABLE EARL SNELL,
Governor of the State of Oregon.

Dear Sir:

In compliance with the provisions of section 100-115, O. C. L. A., we have the honor of presenting to you the report of the Oregon State Highway Commission for the period from July 1, 1942, to June 30, 1944.

Respectfully yours,

OREGON STATE HIGHWAY
COMMISSION,

T. H. BANFIELD, Chairman,
ARTHUR W. SCHAUPP, Commissioner,
MERLE R. CHESSMAN, Commissioner.

BIENNIAL REPORT

OF THE

Oregon State Highway
Commission

Fiscal Years 1943 and 1944

INTRODUCTION

In accordance with the law, every two years the State Highway Commission makes a report to the Governor of the State of Oregon by the presentation of such financial, statistical and other data as are needed for an intelligent understanding and study of Oregon's highway problems. The period covered by this report extends from July 1, 1942 to June 30, 1944, which is the biennium elapsed since the submission of the last previous report. Factual data extending from the year 1917, which year witnessed the inauguration of the Oregon road-building program, are also included. Forecasts of probable revenues and requirements for the next biennial period are given. In certain cases statistical tables have been reduced to the calendar-year basis in the interest of clarity.

The first section of this report contains the Commission's report to the Governor and includes legislative recommendations and discussion of budgetary and other financial matters. The second section contains the report of the State Highway Engineer to the State Highway Commission. Section Three contains statistical compilations.

SECTION ONE

General Comments

The Impact of the War on the Highways

When the Fifteenth Biennial Report was written, the war was under way. It was pointed out at that time that the shortage of strategic materials and the shortage of manpower would be a severe handicap to the proper maintenance of highways and would stop the orderly process of construction and reconstruction. The War Production Board took early action against the diversion of essential labor and materials to projects not considered by it to be essential to the war effort. As a result of this action, a number of contracts were canceled and the federal funds for the building of highways were frozen. The only types of construction projects permitted were those approved by the Army or the Navy and the War Production Board as being essential to the war effort. These projects included the building of access roads to military or naval reservations and war industries, the building of flight strips or small satellite airfields adjacent to highways for the take-off and landing of military aircraft, the building of access roads to mineral deposits and, later, the building of access roads to forests.

There was considerably more money expended in the building of access roads of the character above named in Oregon than in the average state; first, by reason of the fact that three great army cantonments were located in this state and, second, the major development of wartime industries in Oregon. Of the latter, the foremost is the building of ships. A number of the access roads constructed were roads to give access to the shipyards.

Following is a table illustrating the extent of the federal war emergency programs:

FEDERAL WAR EMERGENCY PROGRAMS—1941-1944

Class of Projects	Total Amount		
	State	Federal	Total
Access Road Projects	\$ 495,000	\$4,735,000	\$5,230,000
Strategic Network Projects	500,000	1,460,000	1,960,000
Flight Strips		1,197,000	1,197,000
	<u>\$ 995,000</u>	<u>\$7,392,000</u>	<u>\$8,387,000</u>

Highway Maintenance

The necessity for the maintenance of the highway system to preserve the capital investment in the Oregon road system and the necessity of providing smooth, serviceable roads to carry essential war and civilian traffic and to reduce tire wear, are apparent to everyone. Many difficulties were encountered in carrying out this essential work. For a time it was almost impossible for the Commission to contract the production of crushed rock and gravel for use in the maintaining of highway surfaces. This was due in part to the rapid expansion of the work of the construction industry in the building of military cantonments, naval stations, air fields, shipyard and housing facilities, and, in particular, to the difficulty contractors were experiencing in the securing of repair parts for equipment.

As time went on, lumber became one of the more critical of materials with the result that the Highway Commission experienced great difficulty in the securing of lumber for the maintenance of bridges.

The diversion of asphalt tank cars to the East Coast interfered very much with the obtaining of prompt shipments of



MATURE ROADSIDE PLANTINGS OF RUSSIAN OLIVE, AILANTHUS
AND LOCUST TREES ALONG THE COLUMBIA RIVER HIGHWAY
NEAR BOARDMAN IN MORROW COUNTY

asphalt. Fortunately, however, the Commission anticipated this condition and provided storage facilities for about a half-million gallons at strategic points over the state. The storage tanks were filled early in the spring before the demand developed, thus avoiding costly and troublesome delays during the working season. Largely because of this arrangement, the department was able to carry on the reoiling and patching of the highways of the state without appreciable delays.

The most serious condition was, and still is, the manpower shortage. Thirty per cent of the department's personnel is in the armed forces. Others have left the department to accept more lucrative employment in the war industries. The maintenance forces are reduced approximately 27 per cent. To overcome this handicap, the Highway Commission increased the hours of work from 44 to 48 and, by the declaration of an emergency, placed the special crews engaged in oiling and pavement repair on a 54-hour week. In order to attract labor to keep these crews operating, the Commission increased the wage rates for those employed in the lower brackets. By this increase in hourly rate and the increase in hours of working time, these employees were able to earn a wage which, while not equal to the wages paid in war industries, was sufficient to care for the increased cost of living in a war economy.

The Highway Department employs many women in the maintenance operations, making use of them in the flagging of traffic, the driving of small trucks and other of the lighter tasks. This has contributed materially to the success of the Highway Commission in keeping the highways in very satisfactory condition and in preventing excessive depreciation of capital investment in Oregon's road system.

Military operations and the operations of contractors engaged in the construction of military and naval installations of various kinds caused considerable damage to the state highways and claims will be presented to the Congress, in accordance with the congressional provision, to obtain reimbursement for this damage. Such claims will total about \$180,000.

The cost of the maintenance of highways has increased by 40 per cent over that during the prewar year of 1941, due to the following causes:

1. Discontinuance of reconstruction and betterment, which fact has made necessary the continued maintenance of inadequate facilities;
2. Increases in numbers of the heavier trucks using the highways, including a great increase in log-truck traffic;
3. Increase in the cost of material and supplies;
4. Increased expense of operating older equipment;
5. Increase in wage rates paid the low-income group.

Preparation of Plans for the Postwar Period

Everyone realizes the difficulties of the change-over from a wartime to a peacetime economy. The predictions of the economists vary over a wide range. Some are very pessimistic and predict that private industry will not be able to move rapidly enough to absorb a rapid demobilization of ten million men and women in the armed services and the demobilization of thirty million men and women in the war industries. They believe that a very large public works program will have to be carried on for a rather extended period of time in order to prevent economic chaos. Other economists are quite optimistic and are of the opinion that the tremendous demand for consumers' goods will rapidly absorb labor surpluses in industry and that public works projects should be at best only a stopgap to absorb the unemployed temporarily until private industry can take over the job. It would appear that balanced judgment should indicate some mean between the two extremes.

There would likewise appear to be two classes of public works—one class consisting of projects which will be of benefit to the people over a long period of time, projects which may be built sooner than would be deemed necessary in normal times but which, in time, will prove worth-while projects, and another class consisting of projects needed now. Included in the latter classification are highways which will materially decrease the cost of the movement of goods and services and

which are essential in the growth and betterment of our entire economy. All people are agreed that we must have full employment.

Two years ago, the Congress had freshly in mind the experiences of the great depression and appeared to be keenly alive to the importance of planning worth-while and intelligent public works projects to be operative during the period of conversion in order to avoid the wasteful and extravagant "made" work as exemplified by the operations of the WPA.

The American Association of State Highway Officials proposed at that time the passage of a bill authorizing the expenditure of one billion dollars of federal funds for each of the three postwar years. This amount, when matched with state funds on the basis of 75 per cent federal funds and 25 per cent state funds, represented the minimum funds necessary to do the necessary job on the highways, keeping in mind that no federal funds have been available, except for the building of access roads to military and naval establishments and defense industries, since the start of the war, and that in the meantime the roads have had to carry the impact of wartime heavy truck traffic.

Attention was called to the fact that the Federal Government is now realizing from gasoline taxes and federal use taxes \$550,000,000 a year and \$200,000,000 a year from imposts on the sale of lubricating oils, parts and accessories and excise taxes on the sale of cars and trucks, making altogether \$750,000,000 per year taxes levied against the road user. It is estimated that this huge tax will be in excess of \$1,000,000,000 a year when the war is over and restraints on the sale of gasoline and tires are removed. In the meantime, in the war years, the accumulated taxes from this source will be about \$2,500,000,000. While it is true that the road user should pay his proportionate share of the expense of the Government, including the war, it is apparent that these special taxes are far beyond the share of any one group and in equity and justice the major part of these amounts should be returned to the states for use on roads and streets. The Federal Government penalizes the states for the diversion of road-user funds for other than road purposes, yet itself has become the most flagrant offender. Therefore, the

Commission feels that the federal funds for roads are in no sense a subsidy; rather, that since the Federal Government has seen fit to invade the historic and traditional fields of taxation of the states for the building and maintaining of roads, these funds should be returned to the states for the improvement of roads and streets. After all, the Federal Government has contributed a relatively small part of the cost of the road building that has been done in the United States and nothing for the maintenance of the roads. The great burden has been upon the local people and if the Federal Government continues to tax the road users, it should return the money to the states for the purpose of constructing and reconstructing roads.

As time went on, Congress seemed to cool toward the appropriations for roads and other forms of postwar public works and as a result the states have been very much in the dark in the planning of their postwar work. At the time this report is written, no postwar road bill has passed the Congress and the bill which passed the Senate reduced the authorization from \$1,000,000,000 per year to \$450,000,000 per year. The Highway Commission of Oregon has instructed its state highway engineer to prepare a road program, regardless of this condition, to the end that the State would not be found without the requisite plans when the postwar period develops. It has likewise instructed its Chief Counsel in charge of right-of-way acquisition to obtain rights of way on selected projects so that delay will be minimized. The Commission will not be in a position to make definite selections of projects, however, until a bill is finally passed by the Congress and the amounts of federal funds to be made available are made known, together with the terms and conditions governing their expenditure.

In spite of these difficulties, it is anticipated that the Commission will be in a position to let contracts at the rate of \$2,000,000 per month for the first year of the postwar period, provided the Congress will make funds available and authorize the starting of the program.

Oregon's share under the Senate road bill, exclusive of forest highway funds which are expended directly by the Federal Government, will amount to about \$18,500,000 for the three-year period. By matching with the requisite state funds,

this will give a program of about \$31,500,000. If funds were available, the Highway Commission would be in a position to let contracts for twice this amount in the three postwar years.

Preliminary to the selection of the postwar program, the State Highway Commission has made personal inspection of nearly the whole of the primary highway system and most of the secondary system and has conferred with the members of the county courts, many of the city councils and most of the commercial clubs with relation to this program. The Commission has asked these official bodies and other interested groups to furnish it with their recommendations as to projects and relative priorities of projects. The Commission has received these recommendations and has given them careful study.

The Truck Problem

It is necessary to correlate the design of the highways with the design of the heaviest, the longest and the widest vehicle that is to operate over them. Since the larger dimensioned and heavier vehicles require a design based on wider and stronger pavements and wider and heavier bridges, it would appear logical that those who own and operate the heavy vehicles should pay the extra cost of the facilities required to carry them. Many years ago it was decided to design highway pavements to support 18,000-pound axle loads and to design bridges for what is called an "H-15 loading", which loading is, roughly, the loading imposed on the bridge by two streams of trucks, as one stream passes the other, each stream of trucks consisting of a 15-ton truck preceded and followed by 11-ton trucks spaced 30 feet apart. The earlier pavements and some of the bridges were not wide enough to provide for the safe passing of two 8-foot vehicles. Gradually, through the years, most of the pavements and many of the bridges have been widened to provide safe passing for 8-foot vehicles, but limited finances have prevented any change in design to afford the load-carrying capacity of either the bridges or the pavements beyond the originally selected limits. In the meantime, the demand for greater pay-load capacity has resulted in the design and construction of larger and larger trucks. Unfortunately, highway facilities cannot change with the frequency of truck design.

Investigations by various interim committees of the Legislature indicate quite clearly that the larger trucks are not now required to pay fees and taxes commensurate with the cost of the facilities at present provided or to cover the maintenance cost which their operation entails. Reference is made to the recent report entitled "Report of the Legislative Interim Committee for the Study of Motor Truck Transportation in Oregon" authorized by House Joint Resolution No. 5. It is apparent that the laws regulating the operation of motor vehicles on highways must be geared to the design of the present highway facilities. It is, therefore, the considered opinion of the Highway Commission that the full use of each highway for the transportation of goods by truck, including commercial transports, logging trucks, farm trucks, et cetera, should be afforded and that limits on weights and dimensions should be placed as high as the structural and geometric design of the individual highway will permit without damage to the highway and without increased traffic hazard. Action to that end would be in the public interest, as it would reduce the cost of the transportation of goods in both intrastate and interstate commerce.

To permit an increase in the gross weight of the train of vehicles and load without increasing the risk of damage to the highway facilities, it is necessary to increase the permissible length of the train of vehicles by a reasonable amount and to require the use of more axles. This, in turn, will reduce the individual axle load and the structural stresses imposed thereby. Increase in length of load can be permitted, however, only when the alignment of the road is sufficiently straight and the pavement is sufficiently wide. It is for that reason that the control of weights and dimensions should take into consideration the design characteristics of the individual road.

During the wartime emergency, the Legislature, under Chapter 266, Laws of 1943, gave temporary authorization to the State Highway Commission to grant permits for the required movement of trucks of larger dimension and greater weight than are permitted under existing statutes, this authorization to terminate on July 1, 1945. The law mentions no limiting maximums on either size or weight. Acting under this permissive legislation, the State Highway Commission

has issued wartime emergency permits for the movement of oversize and overweight trucks, making such permits subject to such conditions, regulations and specifications as the Commission deemed necessary to give protection to roads and to safeguard other traffic. Sixty-foot vehicles have been permitted to move over a select group of highways, known as Group No. 1 highways, that are sufficiently wide and straight to permit the operation of the longer vehicles with safety. The additional length, permitting additional axles, made possible the increase of the gross weight from 54,000 pounds to 71,200 pounds without increasing the stresses imposed upon bridges and pavements. Group No. 1 highways are sufficiently straight and sufficiently wide to permit a train of vehicles 60 feet in length and 8 feet in width to move over the highway without encroaching upon the left-hand lane of the traveled way. With minor improvements, additional roads can be widened and straightened at critical points so as to permit the safe movement of this type of vehicle.

The regulations contained in the permits issued by the Commission are approximately in accord with the statutes fixing dimensions and weights in the adjoining states of Idaho and Washington; therefore, for the period of the war they have effectively removed traffic barriers to the free movement of traffic between adjoining states, except in the case of California, where weights are permitted in excess of those set by the Oregon State Highway Commission.

After more than a year of operation under the permit system on the Group No. 1 highways, the Commission can certify that such movements have taken place without appreciable damage to the highway facilities and without undue hazard to the traveling public. It should, however, be borne in mind that these are the maximum sizes and weights that can be permitted without major expenditures for wider and stronger highway facilities.

Log-truck Traffic

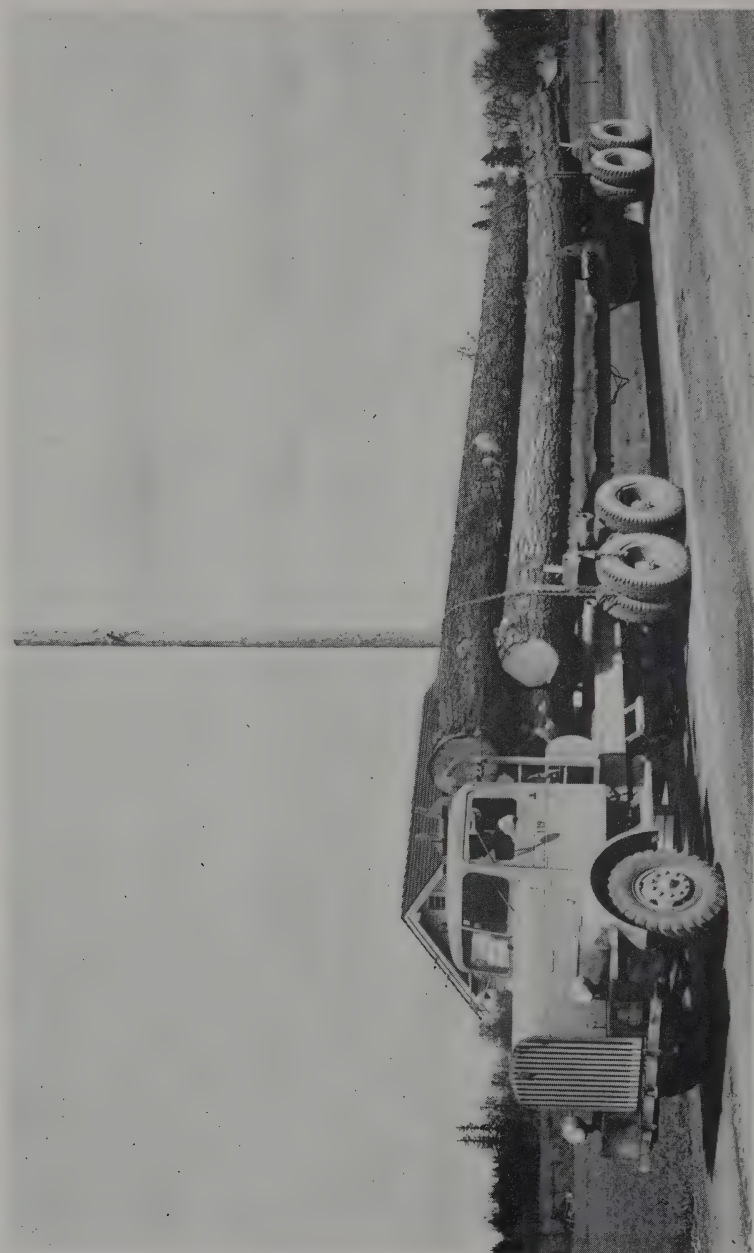
One of the controversial issues with which the Highway Commission has been confronted almost constantly is the question of log-truck traffic. The Highway Commission recognizes

that the lumber industry is one of the foremost industries of the State and that the potentialities in the utilization of by-products of timber are infinite, but, in the public interest, control of the weights and dimensions of the log carriers so as not to overstress the highway facilities or to cause undue hazard to the general public, is necessary.

There has been a constant demand on the part of the truckers of logs to induce the Highway Commission to permit greater weights. The Legislature of 1941 adopted the suggestion of the Highway Commission for increased weight provided the vehicle length were increased and more axles were required to reduce the concentration of the load on the tandem axles. This gave a total gross load, on vehicles equipped with tandem axles on the truck-tractor and tandem axles on the trailer, of 68,000 pounds when the distance between the first and the last axles was approximately 51 feet. The Commission in turn permitted a five per cent tolerance which gave a maximum total gross weight of 71,200 pounds.

The Legislature likewise granted a tolerance of ten per cent to the smaller trucks having single driving axles. When the distance between the first and the last axles is a maximum length of about 37 feet, a tolerance of 5,400 pounds is permitted. The Commission has further permitted an increase of 1,600 pounds, making a total tolerance of 7,000 pounds (in the maximum case) before arrests are made. The law permitting weight tolerance specifically states: "The intent of the act is that said permissible excess weights shall be deemed tolerance weights and not arbitrary increases in gross weights or gross axle or gross wheel weights." The Commission believes that if the loggers will load to the established statute loads, the total tolerance permitted is sufficient for the truckers to avoid overweights subjecting them to fine and penalty. While it is recognized that it is more difficult to load a logging truck than a commercial carrier handling packaged goods and to correctly estimate the weights in each case, the constant loading and weighing of trucks should afford the requisite experience for loggers to estimate well within the tolerance provided.

The Commission has received full cooperation from the leaders of the industry, but some of the haulers of logs have



LATE TYPE DIESEL LOG TRUCK WITH TYPICAL LOAD OF DOUGLAS FIR LOGS

deliberately tried to evade the law by the placing of greater weight on their trucks in order to get a larger pay load. This is evidenced by numerous cases where the haulers are known to have stopped their trucks on roads approaching the highways and waited for the weighmasters to leave the scales before proceeding with the load.

Many of the loggers have contended that the law should be changed, making the M fbm scale of the logs the control rather than the weight of logs. The proponents of this plan claim that it is much easier for them to estimate the scale of logs than it is the weight of logs, and they could then easily keep within the scale set. It has even been proposed that after securing trial weights the Highway Commission set the scale in the various sections of the state for the various species of timber. The Commission has opposed this type of legislation for the reason that the design of bridges and pavements must be based upon weight. If too great a weight is placed upon either, the stresses imposed will cause the facilities to fail. In order to throw greater light on this subject, the Highway Commission caused an investigation to be made. A number of loads were scaled and then weighed, covering the various species in various parts of the state.

The log scale is designed as a rule to show the amount of lumber which should be cut from a log with reasonable care in cutting. Two log scales are now in general use in the Northwest. The Spaulding Log Scale adopted as a standard by the Columbia River Log Scaling and Grading Bureau is used in the western section of Oregon where Douglas fir is predominant. In the Eastern Oregon section, where pine is the principal species cut, the Scribner Decimal C Log Rule is generally used. These two log scales are both based on a diagram of the end of the log which divides the area into one-inch boards and an allowance for soft kerf. The Spaulding Log Rule and the Scribner Decimal C Rule differ but little in the lumber content shown and for all practical purposes could be used interchangeably. In making up a diagram the log is first scaled with the largest scale that can be inscribed within the circular outline of the small end of the log. The area in the segments outside the inscribed scale is largely waste, as only boards of

commercial width which can be cut with square edges throughout their length are considered. It is thus easily seen that the percentage of waste in the small-diameter logs is much greater than in large-diameter logs. This fact is reflected in the great variation per thousand board feet scale measure between logs of different diameter. A similar variation is found between logs with the same small-end diameter but a different length.

It is customary to scale Douglas fir logs up to 40 feet in length. In consequence, since the taper of the log is disregarded, the weight of a considerably larger portion of the longer logs is ignored. The natural taper of the logs varies widely, especially on butt-cut logs.

It is likewise important to recall that there is one important variant that is inherent in any log scaling. In measuring the diameter in a log in scaling, the measurement is taken under the bark. Logs having a thick bark have a considerable weight in the bark, but this is not taken into account in establishing the log-scale content of the log. Bark four inches in thickness is not uncommon in green Douglas fir logs. On a 30-inch log, 40 feet in length, which tapers one-fourth inch per foot of length, the volume is increased 50 per cent due to the four-inch bark, but the log scale remains the same. Logs from fire-killed timber are much lighter than green timber. In general there is no bark on the fire-killed logs.

Species of timber has a great effect on timber weights. In general, hemlock is the heaviest and spruce the lightest. The unit weight of the heavier species overlap each other so that a gradual variance from the heaviest to the lightest is found throughout the state.

To show the fallacy of attempting to get any relationship between weights and log scale, the two loads carrying the highest and lowest weight per board foot were both Douglas fir from the Lorane area and were traveling over the same highway on the same day. The heavier load weighed approximately 2.6 times as much per M fbm as the lighter load.

The basic principles of structural design, for both road surfaces and bridges, require that the loads be expressed in terms of weight. Any alternate proposal of measurement must

be readily converted to weight and bear a constant relationship to weight. If the relationship to weight is not constant under all conditions, then the maximum allowed load measured by this unit must be based upon the most unfavorable relationship that can be anticipated.

The log-scale rule is an excellent rule for its purpose. It is not intended to be a measure of weight or volume and the incidental relationship is so erratic as to be of no practical value whatsoever. The adoption of the proposal of substituting log-scale measurement for weight would either result in unreasonable restrictions on the logging industry by reason of the low load limit necessary to control the heavier material or would be disastrous to the highway facilities because of the movement of loads so greatly in excess of the designed capacity as to cause complete failure. Neither of these results is desirable. Both would handicap the lumber industry and the second proposal would be grossly inimical to the best interest of the people of this state and extremely hazardous to life and property. The highway facilities are designed on the basis of the superimposed load measured in pounds. They cannot be designed on any other basis than that of weight. Load regulations must be on the same basis.

The above observations are given somewhat fully in order to point out clearly the error in attempting to substitute the log scale as a measure of weight for the weight in pounds as now used. The data showing the measurement of logs and the relationship between log scale and actual weight appears in Technical Report No. 44-4, published by the Oregon State Highway Department, which report is available to anyone further interested in the subject.

The Highway Commission has appreciated the problems of the timber industry, particularly in war time, and has met with members of the industry, the ODT and the State Police from time to time to consider these problems in relation to the using of the highways. The Commission has experienced fine cooperation with the leaders of the industry. Both the Commission and the leaders of the industry have been concerned with the few wilful and habitual violators who have caused the Commission to take precautionary measures to

protect the public interest. Recently, at a joint meeting of the members of the industry and the Commission, action was taken by the logging interests to appoint a liaison committee to work with the Commission to assist in solving these problems. Also, action was taken by the industry to institute a plan of self-government to prevent, in so far as possible, the abuse of the privilege of highway use by logging trucks. The Commission is very grateful for this co-operation and looks forward to a solution of the many and vexing problems that arise in connection with the hauling of logs over public highways.

Trans-Columbia River Interstate Bridge Studies

Under Chapter 202 of the Oregon Laws of 1941, the Oregon State Highway Commission was empowered to construct, reconstruct, purchase, rent, lease or otherwise acquire, improve, operate and maintain a bridge or bridges over the Columbia River to the State of Washington, and to enter into all necessary contracts or agreements therefor with the United States or any of its agencies, the State of Washington or any of its political subdivisions, or any of its agents, any of the political subdivisions of the State of Oregon, and any person, individual, association, corporation, domestic or foreign; to establish free or toll bridges, to pledge the same and the revenues thereof for financial loans, providing for acceptance of donations or gifts of land, money or other valuable things, and providing for the exercise of the power of eminent domain.

Preliminary to the possible exercise of such power, the Oregon State Highway Commission authorized the Oregon State Highway Department to act jointly with the Washington Department of Highways in the making of a survey of the existing facilities and of possible new connections between the two states involving the bridging of the Columbia River. This survey included origin and destination studies of the actual and potential traffic involved, reconnaissance surveys to determine the cost of the improvements, and examination of the valuation of existing toll bridges spanning the Columbia River. These data were published as Technical Bulletin No. 16.

This report of the study of the economic warrant for the purchase of existing bridges and for the building of new bridges

was signed by the engineers of both states and embraced the following findings: (1) The purchase of the Cascade Locks and Hood River bridges by the two states and the operation of them free of toll would require an unjustifiable subsidy. Their operation as state-owned toll structures under a reduced rate schedule would be an even less desirable investment; (2) There appears to be no basis of operation or method of financing whereby the purchase of the Longview bridge structure by the states and its operation either toll-free or on a reduced toll schedule have any economic justification; (3) The proposed crossings of the lower Columbia River appear to have no economic justification whatsoever; (4) The proposed crossing at Seufert has considerable economic justification. The cost of this bridge (slightly under a million dollars) affords the opportunity for the cheapest crossing of any site studied; (5) While it does not have as great an economic justification as the Seufert crossing, the Biggs crossing has considerable economic warrant; (6) The Paterson crossing does not have sufficient economic justification to recommend it; (7) The Umatilla crossing may be feasible provided it is combined with the building of the proposed Umatilla Dam.

In brief, the finding is against the purchase of any of the existing toll bridges and favors the Seufert bridge as having the most merit if a new bridge is to be constructed across the Columbia River to join the highway systems of the two states.

The Commission has taken no action as yet on this report.

Budgetary and Financial Matters

Sources and Amounts of Income for State Highway Improvement

The funds disbursed by the State Highway Commission for the design, construction, maintenance and operation of highways are derived from two general sources: (1) State funds, which consist principally of motor vehicle imposts; and (2) federal aid of various types and classes.

The state motor vehicle imposts, which produce the state fund income, are as follows:

1. Motor vehicle license fees, which include both vehicle registration fees and drivers' license fees.
2. Motor fuel taxes.
3. Motor transportation fees.
4. Fines for traffic law violations.

In addition to the above, certain minor increments accrue to the state fund income by virtue of cash discounts and cooperative payments from counties, railroads and others.

The detailed figures for state fund income for the calendar years 1943 and 1944 are given in accompanying Tables I and II.

TABLE I
State Road-user Income for Calendar Year 1943

	Gross Amount Paid by Motor Vehicle Owners	Collection Expense	Net Amount for State Highways, State Police and Counties
Motor vehicle license fees	\$ 3,692,927	\$ 458,346	\$ 3,234,581
Gasoline tax (\$11,438,768 less \$1,750,464 refunds)	9,688,304	39,949	9,648,355
Diesel fuel tax	67,390	2,308	65,082
Motor transportation fees	1,994,127	258,273	*1,735,854
Fines	54,690	.....	54,690
Totals	\$15,497,438	\$ 758,876	\$14,738,562
Less \$2,612,416 contribution to counties, and \$390,899 contribution to state police			3,003,315
Net revenue for state highway purposes			\$11,735,247

* Includes the transfer of \$432,729 for the fourth quarter of 1942, but does not include the transfer of \$482,617 for the fourth quarter of 1943.

TABLE II

Estimated State Road-User Income for Calendar Year 1944

	Gross Amount Paid by Motor Vehicle Owners	Collection Expense	Net Amount for State Highways, State Police and Counties
Motor vehicle license fees	\$ 3,774,000	\$ 472,000	\$ 3,302,000
Gasoline tax (\$11,150,000 less \$1,880,000 refunds)	9,270,000	30,000	9,240,000
Diesel fuel tax	245,000	5,000	240,000
Motor transportation fees	2,065,000	205,000	1,860,000
Fines	86,000		86,000
Totals	\$15,440,000	\$ 712,000	\$14,728,000
Less \$2,312,000 contribution to counties, \$736,000 contribution to cities, and \$381,000 contribution to state police			3,429,000
Estimated net revenue for state highway purposes			\$11,299,000

State moneys expendable for highway purposes as indicated by Tables I and II are augmented by funds made available to the State by the Federal Government. Funds from this source fall into two general classifications: (1) Periodic federal aid for highways which consists of funds definitely and regularly apportioned for this purpose by the Congress. Temporarily, however, the authorization and apportionment of this class of federal funds has been suspended for the duration of the war. (2) Emergency federal appropriations for highway work to meet the needs of the war, the immediate needs of employment, et cetera.

In the first category are federal aid funds for the federal primary system, federal aid for the federal secondary system and federal funds for grade-crossing elimination. The Congress now proposes adding to this category federal funds for extensions of the federal aid system into urban areas. In general, such funds are apportioned from year to year and the regulations covering their use do not vary appreciably. The use of such funds may, therefore, in general, be planned in advance. Falling in the second category are cooperative funds such as the recent funds for access roads to military and naval establishments, mines and forests and, in the past, with such cooperative funds as the Public Works Administration (PWA) funds and the Work Projects Administration (WPA) funds. Funds of this second category may or may not be available at any

given time, as their availability is not on any established basis. Usually such funds are not available to the states in any definite amounts. The extent to which the State may avail itself of them is limited by the State's ability to submit acceptable projects and to contribute a share from state funds.

The accompanying Table III shows the totals of state highway income during what might be called the war period, segregating that income as between state funds and federal funds. For comparative purposes it shows, also, the corresponding incomes for 1930, a predepression year; for 1933, a depression year; and for 1941, a prewar year.

TABLE III
Income (for State Highways)

Year	State Funds	Federal Funds	Miscellaneous	Total
1930	\$12,279,444	\$ 1,565,288	\$ 294,634	\$14,139,366
1933	6,337,057	2,723,724	194,941	9,255,722
1941	15,093,638	2,810,895	69,291	17,973,824
1942	13,450,739	2,273,617	22,418	15,746,774
1943	11,738,155	4,341,584	34,050	16,113,789
1944 (approximately)	11,303,000	3,751,000	27,000	15,081,000

Attention is called to the fact that the amounts of federal funds shown in Table III are the amounts of federal funds collected during the respective calendar years to reimburse the State for expenditures made on cooperative projects, including expenditures made during previous years as well as expenditures made during the current year. The amounts should not be confused with the amounts of federal aid earned during those years or with the amounts of federal aid apportioned to the State for those years, which may differ very greatly from the amounts collected, because of the fact that the performance of the work and the collection of reimbursement for the apportionment of any year necessarily extend over a period two or more years in length.

Collections of federal funds were relatively large during 1943 and 1944, due to the large amount of construction work performed for the Federal Government during those years on emergency flight strips and access roads to military installations of various kinds.

Federal funds received by the State Highway Commission during normal times can be used only for improvements of a

permanent nature and usually they can be used only on highways included in the federal aid highway system of the state—primary or secondary. They are not available to meet maintenance expense, operating costs or interest and principal on the bonded indebtedness, and only in connection with certain classes of work are they available for the expense of making surveys and the securing of rights of way.

Amounts Received and Disbursed, 1943-1944

The amounts received into the State Highway Fund from all sources and the amounts disbursed therefrom during the calendar years 1943 and 1944 are as shown in accompanying Table IV.

TABLE IV
Receipts and Disbursements, 1943 and 1944

	1943 (Actual)	1944 (Estimated)
<i>Receipts:</i>		
Road-user income	\$14,738,562	\$14,728,000
Federal funds collected	4,341,584	3,751,000
County cooperation	1,550	2,000
Miscellaneous cooperation	32,500	25,000
Cash discounts	2,908	4,000
Gross receipts	\$19,117,104	\$18,510,000
Deduct for contributions to counties, cities and state police	3,003,315	3,429,000
Net income for highway purposes	\$16,113,789	\$15,081,000
Balance on hand at beginning of year	2,052,691	4,662,000
Total amount available for disbursement	\$18,166,480	\$19,743,000
<i>Disbursements:</i>		
Capital outlays	\$ 5,066,171	\$ 3,793,000
Maintenance	4,896,506	5,735,000
Bond expense	2,470,819	2,226,000
Operation and miscellaneous	1,070,526	798,000
Total amount disbursed	\$13,504,022	\$12,552,000
Balance on hand, end of year	\$ 4,662,458	\$ 7,191,000

Estimates of Receipts and Disbursements, 1945-1946

Estimates of receipts and disbursements for the calendar years 1945 and 1946 are shown in accompanying Table V.

These estimates contemplate federal postwar highway funds being made available in the amounts called for in Senate Bill 2105, which bill has been passed by the Senate as of the time this report is written, but has not, as of that time, been passed by the House of Representatives. They contemplate, also, that the contracting of the postwar construction program will begin in the early summer of 1945.

TABLE V

Estimated Receipts and Disbursements, 1945 and 1946

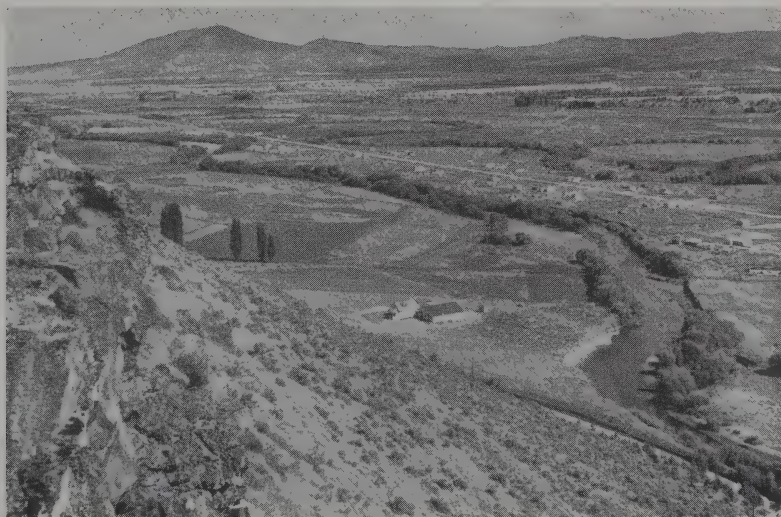
	1945 (Estimated)	1946 (Estimated)
<i>Receipts:</i>		
Motor vehicle license fees	\$ 3,200,000	\$ 3,200,000
Gasoline tax	9,300,000	11,000,000
Diesel fuel tax	220,000	210,000
Motor transportation fees	1,700,000	1,625,000
Fines	65,000	55,000
Cash discounts	4,000	6,000
County cooperative funds	2,000	2,000
Federal cooperative funds	4,000,000	4,800,000
Gross receipts	\$18,491,000	\$20,898,000
Deduct for contributions to counties, to cities, and to state police	3,372,000	3,419,000
Net income for state highway purposes	\$15,119,000	\$17,479,000
Balance on hand at beginning of year	7,191,000	6,413,000
Total amount available for disbursement	\$22,310,000	\$23,892,000
<i>Disbursements:</i>		
Capital outlays	\$ 7,660,000	\$13,335,000
Maintenance	5,675,000	6,030,000
Bond expense	1,682,000	1,221,000
Operation and miscellaneous	880,000	1,050,000
Total disbursement	\$15,897,000	\$21,636,000
Balance on hand, end of year	\$ 6,413,000	\$ 2,256,000

State Debt Structure for Highways

At the close of the calendar year 1944, the state highway bond debt amounts to \$6,506,000, a reduction of \$3,985,750 having been effected during the years 1943 and 1944.

While payment of interest and principal on bonds still constitutes a major item of expense, the amount involved is much less than formerly and is decreasing rapidly. The 1943 and 1944 payments were \$2,470,245.32 and \$2,224,110.28, respectively. Payments to be made in 1945 and 1946 are \$1,680,913.99 and \$1,219,998.95. Payments will continue to decrease in amount until 1960 when the last of the bonds now outstanding will be retired.

Full details pertaining to state highway bond indebtedness appear in accompanying Tables VI and VII.



CROOKED RIVER AND THE MADRAS-PRINEVILLE SECONDARY
HIGHWAY NEAR PRINEVILLE

TABLE VI
State Highway Bond Indebtedness Account

Calendar Year	Annual Principal	Annual Interest	Annual Total	Bonds Outstanding At End of Year
1917	\$	\$ 5,000.00	\$ 5,000.00	\$ 1,400,000.00
1918	.....	72,900.00	72,900.00	2,840,000.00
1919	.....	141,099.99	141,099.99	10,140,000.00
1920	.....	503,725.00	503,725.00	19,140,000.00
1921	.....	974,870.83	974,870.83	30,700,000.00
1922	125,000.00	1,521,266.67	1,646,266.67	36,075,000.00
1923	179,750.00	1,742,150.00	1,921,900.00	38,395,250.00
1924	334,500.00	1,824,240.00	2,158,740.00	38,060,750.00
1925	3,797,000.00	1,799,267.05	5,596,267.05	37,263,750.00
1926	1,197,000.00	1,722,761.65	2,919,761.65	36,066,750.00
1927	1,600,000.00	1,663,215.87	3,263,215.87	34,466,750.00
1928	1,750,000.00	1,586,060.99	3,336,060.99	32,716,750.00
1929	1,825,000.00	1,503,578.47	3,328,578.47	30,891,750.00
1930	1,925,000.00	1,418,314.70	3,343,314.70	30,466,750.00
1931	1,975,000.00	1,386,522.18	3,361,522.18	29,491,750.00
1932	2,975,000.00	1,369,435.06	4,344,435.06	27,516,750.00
1933	1,975,000.00	1,290,992.54	3,265,992.54	27,041,750.00
1934①	2,175,000.00	1,250,010.02	3,425,010.02	25,866,750.00
1935①	5,675,000.00	1,225,541.73②	6,900,541.73	25,691,750.00
1936①	2,950,000.00	1,089,213.37	4,039,213.37	23,441,750.00
1937③	2,800,000.00	984,228.06	3,784,228.06	21,641,750.00
1938③	3,550,000.00	877,764.27	4,427,764.27	18,841,750.00
1939	2,000,000.00	776,394.23	2,776,394.23	16,841,750.00
1940	2,075,000.00	683,724.19	2,758,724.19	14,766,750.00
1941	2,150,000.00	589,085.40	2,739,085.40	12,616,750.00
1942	2,125,000.00	493,790.36	2,618,790.36	10,491,750.00
1943	2,070,250.00	399,995.32	2,470,245.32	8,421,500.00
1944	1,915,500.00	308,610.28	2,224,110.28	6,506,000.00
1945	1,453,000.00	227,913.99	1,680,913.99	5,053,000.00
1946	1,053,000.00	166,998.95	1,219,998.95	4,000,000.00
1947	650,000.00	126,765.80	776,765.80	3,350,000.00
1948	500,000.00	104,109.53	604,109.53	2,850,000.00
1949	425,000.00	86,797.01	511,797.01	2,425,000.00
1950	325,000.00	72,171.99	397,171.99	2,100,000.00
1951	275,000.00	62,046.97	337,046.97	1,825,000.00
1952	275,000.00	52,984.45	327,984.45	1,550,000.00
1953	275,000.00	43,921.93	318,921.93	1,275,000.00
1954	275,000.00	34,859.41	309,859.41	1,000,000.00
1955	275,000.00	25,796.89	300,796.89	725,000.00
1956	200,000.00	17,531.25	217,531.25	525,000.00
1957	150,000.00	12,187.50	162,187.50	375,000.00
1958	150,000.00	8,437.50	158,437.50	225,000.00
1959	150,000.00	4,687.50	154,687.50	75,000.00
1960	75,000.00	937.50	75,937.50	.....
	\$55,650,000.00	\$30,251,906.40	\$85,901,906.40	
Less refunding and tempo- rary financing bonds ..	11,450,000.00	.....	11,450,000.00	
Totals①	\$44,200,000.00	\$30,251,906.40	\$74,451,906.40	

① Includes Coast Bridge short-term bonds.

② Includes \$4,866.50 refund to cover accrued interest paid in by Ladd & Bush, Bankers, on Coast Bridge bonds.

③ Includes retirement of 1937 and 1938 short-term bonds.

TABLE VII
State Highway Bonds Issued, 1917 to 1944

Year	Par Value of Bonds Sold		Time for Retirement	Bonds Retired Same Year
	Long-term Construction Bonds	Short-term Bonds for Temporary Financing		
1917	\$ 400,000	\$	8 years	\$
	1,000,000	.....	25 years	.....
1918	1,440,000	.....	25 years	.....
1919	800,000	.....	14 years	.....
	6,500,000	.....	25 years	.....
1920	9,000,000	.....	25 years	.....
1921	.....	3,000,000 ^①	4 years	.....
	8,560,000	.....	25 years	.....
1922	5,500,000	.....	25 years	125,000
1923	2,500,000	.....	25 years	179,750
1924	.....	.....	.....	334,500
1925	3,000,000	.....	25 years	3,797,000
1926	.....	.....	.....	1,197,000
1927	.....	.....	.....	1,600,000
1928	.....	.....	.....	1,750,000
1929	.....	.....	25 years	1,825,000
1930	1,500,000 ^②	.....	25 years	1,925,000
1931	1,000,000 ^③	.....	25 years	1,975,000
1932	.....	1,000,000 ^④	6 months	2,975,000
1933	.....	1,500,000 ^⑤	5 years	1,975,000
1934	.....	1,000,000 ^⑥	1 year	2,175,000
1935	3,000,000 ^⑦	.....	25 years	3,175,000
	.....	1,000,000 ^⑥	6 months	1,000,000
	.....	1,500,000 ^⑥	10 days	1,500,000
1936	.....	700,000 ^⑧	10 days	2,950,000
1937	.....	1,000,000 ^⑧	6 months	2,800,000 ^⑨
1938	.....	750,000 ^⑧	8 months	3,550,000 ^⑩
1939	.....	.....	.....	2,000,000
1940	.....	.....	.....	2,075,000
1941	.....	.....	.....	2,150,000
1942	.....	.....	.....	2,125,000
1943	.....	.....	.....	2,070,250
1944	.....	.....	.....	1,915,500
Totals	\$44,200,000	\$11,450,000	.....	\$49,144,000
Bonds retired	37,694,000	11,450,000	.....	.....
Bonds outstanding end of				
1944	\$ 6,506,000	\$ .....	.....	\$ .....

① Account of unfavorable bond market, \$3,000,000 of 4-year bonds were sold with intention to refund in 1925 with long-term bonds at lower interest rate.

② This bond sale made to enable state to match available federal aid.

③ This bond sale made to finance state relief labor program.

④ This sale of 6-months bonds was made to overcome deficit caused by change in date of licensing cars from January 1st to July 1st.

⑤ This sale of 5-year bonds was made to finance state relief program.

⑥ These sales of short-term bonds made to finance the construction of the five Oregon Coast bridges.

⑦ This sale was made to refund a like amount of Oregon Coast Bridge bonds, resulting in a saving of interest.

⑧ These sales of short-term bonds were made to enable the State to utilize its winter income in carrying on its federal aid program during the preceding summer construction season.

⑨ Includes \$500,000 of 1937 short-term bonds retired December 31, 1937.

⑩ Includes \$500,000 of 1937 short-term bonds retired January 31, 1938, and \$750,000 of 1938 short-term bonds retired December 31, 1938.

Financial Needs of the State Highway Department for the Next Biennium

The financial needs of the State Highway Department for the next biennium are shown in detail in the tables accompanying this report. The net revenue accruing to the state highway fund in this biennium is estimated to be approximately \$34,404,000. A statement of this income and of the Department's obligations (exclusive of obligations in connection with postwar federal aid construction) is shown in Table VIII.

TABLE VIII

Estimate of Income and Obligations—Calendar Years 1945-1946

	Calendar Years 1945-1946
<i>Income:</i>	
Net income, state funds	\$23,798,000
Bills receivable (Federal aid on completed work)	2,415,000
Balance on hand, beginning of 1945	7,191,000
Total amount available (exclusive of federal aid)	\$33,404,000
<i>Obligations: (Exclusive of obligations in connection with postwar federal aid construction)</i>	
Debt service	\$ 2,903,000
To complete contracts in force	576,000
Maintenance of highways	11,705,000
State construction projects	900,000
Minor betterment	475,000
Surveys	700,000
Rights-of-way (for postwar projects)	1,740,000
Quarries, gravel pits and stock-pile sites	55,000
State parks (acquisition and maintenance)	385,000
Maintenance station buildings and other improvements	490,000
Additional equipment	50,000
Administration and operation of highways	1,730,000
Contingency reserve	400,000
Reserve for advance financing of federal aid program	3,000,000
Total of obligations	\$25,109,000
Balance available for matching federal aid	\$ 8,295,000

The disbursements for maintenance, debt service, surveys, rights of way, buildings, administration, state parks, increase in equipment, contingency reserves, reserve for advance finance of federal aid program, funds to complete contracts now in force, minor betterments and a limited state construction program, amount to \$25,109,000, leaving a balance of \$8,295,000 available for the matching of federal funds.

Attention is called to the fact that the obligations do not include obligations in connection with the anticipated postwar federal aid construction program. The amounts of federal funds which will be available and the time of availability are not yet known and, therefore, the amounts of state funds required to match are uncertain. The first bill introduced in Congress (H. R. 2426) called for the allotment of one billion dollars per year for three years. Of this amount, Oregon's share would be \$14,700,000 per year and to match this the State would be required to provide \$4,290,000 per year. Under this bill, Oregon's program for the three years would consist of \$44,100,000 of federal funds and \$12,870,000 of state funds, a total of \$56,970,000. This bill was followed by H. R. 4915 which cut the total amount to be allotted from one billion dollars to one-half billion dollars per year and increased the matching requirements. Under this bill, the State would receive each year \$7,370,000 of federal funds, to be matched each year with \$4,620,000 of state funds, making the totals for the three years \$22,110,000 of federal funds and \$13,860,000 of state funds. The amount of the construction program afforded during the three-year period by this bill would be \$35,970,000. Neither of these bills has passed the House.

Recently the Senate Committee on Roads introduced and passed in the Senate S. 2105 which provides an allocation of \$450,000,000 to the states in each of the three postwar years. It would apportion to Oregon \$6,200,000 of federal funds per year to be matched by \$4,300,000 of state funds, making the totals for the three years \$18,600,000 of federal funds and \$12,900,000 of state funds, affording a construction program for the three years of \$31,500,000.

The \$8,295,000 state funds balance available (see Table VIII) for federal aid matching in the calendar years 1944 and 1945 would be approximately sufficient to match the allotments of the first two years under any one of the three bills H. R. 2426, H. R. 4915 or S. 2105. The amount required for the third year, which would range from \$4,500,000 to \$5,500,000, is expected to be available from 1947 current revenues.

It has been the Commission's policy to reduce and curtail work and expenditures as much as possible during the war

emergency period and not only to live within its greatly reduced income but to create a surplus which can be used so effectively during the postwar period, in cooperation with the Federal Government, in providing needed employment and in the restoration and improvement of the state's highways. The balance of approximately \$7,200,000 estimated to be available at the end of this biennium (see Table IV), together with the current revenues in the ensuing years, should enable the Commission to match federal aid without resorting to any other method of finance.

Should more federal funds be provided, an additional \$3,000,000 can be released for matching purposes in the following manner: The state construction projects and minor betterment projects, amounting to \$1,375,000 in the next biennium might, if necessary, be reduced to release \$1,000,000. This is not desirable, because there are many minor betterments and small jobs of a nature not susceptible to federal aid, which have been deferred for the past three years, which are vitally needed to give better and safer service to the public. This work consists of the widening of curves, the placing of guard rail, the widening of pavement, the oiling of more of the secondary highways, and the like. This work is ordinarily carried on from year to year and is an essential part of an orderly road program.

Also, it is possible, by a rather complicated system of administration and accounting procedure, to obtain advances from the Federal Government to be used in carrying the cost of federal aid work until such time as the regular reimbursement payments of federal aid are received. This, again, is not a desirable procedure, but it can be utilized, if necessary, and might release an additional \$2,000,000. Thus a total of three million dollars might be released to match, in part at least, additional federal funds, if such are provided. For instance, under the terms of H. R. 2426, the \$3,000,000 would match an additional \$10,000,000 of federal moneys; under H. R. 4915, it would match an additional \$4,700,000 of federal funds; and under S. 2105, it would match an additional \$4,300,000 of federal funds.

Maintenance costs have risen sharply, due to the increased cost of materials and labor and the increase in logging and

other heavy traffic. Moreover, many items of maintenance have been deferred, such as the painting of buildings and guard fences, the cutting and burning of brush, the mowing of weeds on the shoulders, the painting of the traffic stripe, replacement of worn-out signs, et cetera, which must be cared for as soon as labor is available. Buildings for the housing of maintenance equipment are sorely needed. All of this work has been discontinued for the period of the war and must be resumed and brought up to date as soon after the war as possible. The demands of maintenance on highway finances will, therefore, be somewhat above normal for the years immediately following the war.

A federal aid program in very considerable amount is urgently needed to make possible the construction and reconstruction work necessary to modernize Oregon's highways, which work has suffered a delay of nearly three years as a result of the war. The benefits that accrue to the public by reason of such work have a value far greater than the cost, and continued delay in its execution would mean continued and increasing loss to the State and its people.

The Congress may be forced, by postwar unemployment problems, to make appropriations for federal aid considerably beyond that now contemplated. For that reason, it is necessary that the income of the State Highway Department be kept as high as possible. The Commission, therefore, recommends that no action be taken which will take away from the Highway Department, during this critical period, any part of the income which would accrue to it under present legislation.

The estimates given in this report are predicated upon starting part of the construction program in the summer of 1945. This would assume victory in, at least, the European theatre by that time. If the war should continue beyond the summer of 1945, with resultant delay to the beginning of postwar construction, the Highway Commission plans to continue the conservation of the revenues of the Department so that they may be utilized to the greatest benefit of the State when the postwar construction program does materialize.



JUDKINS POINT OVERHEAD CROSSING OF SOUTHERN PACIFIC TRACKS
ON PACIFIC HIGHWAY NEAR EAST CITY LIMITS OF EUGENE,
LANE COUNTY

Section Two

REPORT

OF THE

State Highway Engineer

TO THE

State Highway Commission

OF THE

STATE OF OREGON

1943-1944

R. H. BALDOCK, State Highway Engineer

LETTER OF TRANSMITTAL

Salem, Oregon,
January 1, 1945.

To the Honorable State Highway Commission,
T. H. Banfield, Chairman,
Arthur W. Schaupp, Commissioner,
Merle R. Chessman, Commissioner.

Gentlemen:

I have the honor to submit to you herewith the report of the State Highway Engineer for the period July 1, 1942, to June 30, 1944.

Respectfully yours,

R. H. BALDOCK,
State Highway Engineer.

Section Two

REPORT OF THE STATE HIGHWAY ENGINEER TO THE STATE HIGHWAY COMMISSION 1943-1944

INTRODUCTION

This portion of the biennial report has for its purpose the presentation of a brief outline of the various findings and activities of the Highway Department during the current biennium, together with such statistical information as is necessary for a proper understanding of the problems and activities of the Department. The section which immediately follows comprehends a presentation of the organization of the Highway Department, and a brief description of the duties of the various administrative and executive heads. Following this is a report on the progress made during the biennium in the improvement of state highways, which portion, in turn, is followed by reports of the various subdivisions of the highway department organization, as follows:

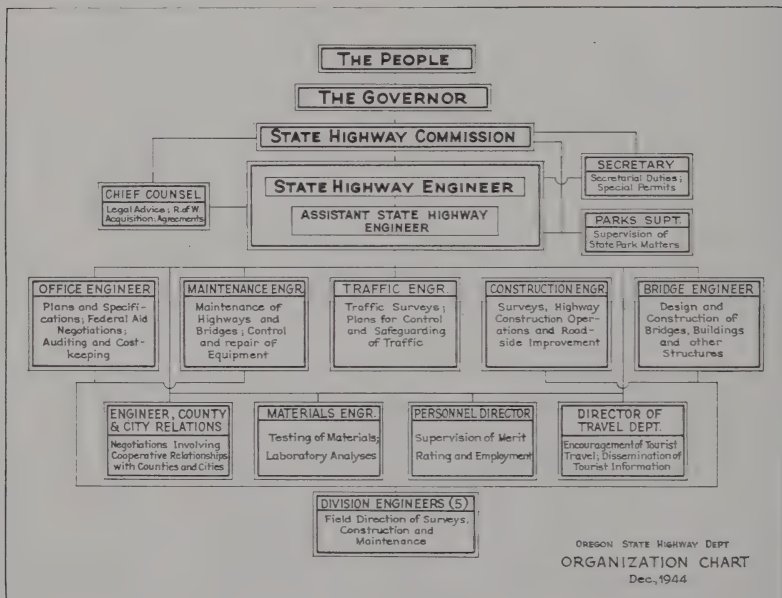
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HIGHWAY DEPARTMENT ORGANIZATION

Administrative and Supervisory Organization

The administrative organization of the Highway Department consists of the State Highway Engineer, the Assistant State Highway Engineer, the Chief Counsel and the Secretary. The executive staff consists of the Office Engineer, the Maintenance Engineer, the Construction Engineer, the Bridge Engineer, the Traffic Engineer, the Parks Superintendent, the Materials Engineer, the County and City Relations Engineer, the Director of the Travel and Information Department, and the Personnel Director. The line or field organization consists of five Division Engineers with headquarters at Portland, Salem, Roseburg, Bend, and La Grande.

The integration of the organization is indicated by the chart given hereinbelow and the paragraphs descriptive of the departments of the various administrative and executive officers which follow:



State Highway Engineer: The State Highway Engineer is the chief administrative official of the State Highway Depart-

ment. He has charge of and is responsible for the activities of all the subdepartments with the exception of the Legal and Right of Way Department and the office of the Secretary to the Commission.

Assistant State Highway Engineer: The Assistant State Highway Engineer is the acting head of the Department in the absence of the State Highway Engineer and, in addition, carries at all times a certain delegated portion of the administrative load. The Staff Officers report to the Assistant State Highway Engineer in connection with certain definite activities, and all personnel matters are under his control. C. B. McCullough is the Assistant State Highway Engineer.

Chief Counsel: The Chief Counsel acts as general counsel for the Highway Commission, has charge of all matters of a legal nature, and superintends the acquisition of property for rights of way, quarries, and other purposes. J. M. Devers is Chief Counsel for the Commission.

Secretary: The Secretary has charge of all details of a secretarial nature, including the preparation and compilation of the minutes of Commission meetings, the issuance of highway use permits, and Commission correspondence. H. B. Glaisyer is Secretary for the Highway Commission.

Office Engineer: The Office Engineer is in charge of the preparation of highway plans and specifications, federal aid negotiations, and accounting. S. H. Probert is Office Engineer.

Construction Engineer: The Construction Engineer supervises field engineering work involved in the locating, planning and constructing of highways, including economic surveys, project analyses and roadside beautification. All contract work other than bridge and building work is under his direction. H. G. Smith is Construction Engineer.

Maintenance Engineer: The Maintenance Engineer superintends the work of maintaining highways and bridges, and supervises the upkeep and operation of equipment owned by the Department. E. A. Collier is Maintenance Engineer.

Bridge Engineer: The Bridge Engineer supervises the design and construction of bridges, grade separations, buildings, and other major structures. G. S. Paxson is Bridge Engineer.

Traffic Engineer: The Traffic Engineer has charge of the problems involved in the direction and control of highway traffic. John Beakey is Traffic Engineer. During Mr. Beakey's absence on military duty, the functions of the Traffic Engineer are being attended to by F. B. Crandall.

Parks Superintendent: The State Parks Superintendent directs the acquisition, operation, maintenance and improvement of state parks. S. H. Boardman is the State Parks Superintendent.

Materials Engineer: The Materials Engineer has charge of the departmental testing laboratories and of the inspection of materials in the field. N. M. Finkbiner is Materials Engineer.

County and City Relations Engineer: The County and City Relations Engineer handles negotiations with county and city officials in matters involving cooperation between the Commission and the counties and cities. Oscar Cutler is County and City Relations Engineer.

Director of Travel and Information: The Director of the Travel and Information Division has charge of the Department's travel promotion campaign and the Division of Tourist Travel Information. H. B. Say is Director of this department. During Mr. Say's absence on military duty, the work of the department is being directed by Oscar Cutler.

Personnel Director: The Personnel Director attends to the keeping of merit rating records and to the interviewing and classifying of applicants for employment. Duties of the Personnel Director are at present being attended to by James McFarland.

Field Engineering Organization

In the performance of the field duties incidental to the supervision and direction of the construction, maintenance and operation of state highways, there are five Division Engineers reporting to the executive Staff Officers named above.

Each division engineer supervises and directs surveys, construction work and maintenance work on the state highways within his division. He acts as the local representative of the

State Highway Department in dealing with county officers, contractors, and the public in general. In other words, the division engineers are line officers having direct charge of the work, and the work is coordinated so as to bring about a uniformity in surveys, construction and maintenance by the staff officers, each of whom acts as the personal representative of the state highway engineer in his negotiations with the division engineers.

The maintenance is directed locally by 16 district maintenance superintendents, located within the five divisions, who have direct supervision of 129 section crews, each working under the direction of a section foreman. The maintenance superintendents also supervise the work of the extra gang crews in removing snow, removing slides, re-oiling surfacings, patching pavements, repairing bridges, etc., which work is largely seasonal in character. Their duties are, in general, to see that the proper materials and equipment are supplied, to supervise the work of the section crews and extra gangs, to keep an accurate account of the expense incurred, and in all respects to look after the upkeep of the highways within their respective territories.

When highway location surveys are to be made in a division, a locating engineer is assigned by the construction engineer to perform the work under the supervision of the division engineer. The construction projects are handled by resident construction engineers who are moved from one division to another as the distribution of the work may require. Each resident construction engineer is in charge of one or more contract jobs and his duties are to measure the quantities of work for which the contractor is entitled to payment, to inspect the workmanship and materials to insure compliance with the specifications, and to otherwise look after the interests of the State in connection with all matters concerned.

Division No. 1 is in charge of W. C. Williams, with headquarters in Portland. During Mr. Williams' absence on military duty, the work of the division is being directed by F. T. Young. The division comprises the counties of Multnomah, Clackamas,

and Washington, and parts of Yamhill, Columbia, and Hood River.

Division No. 2 is in charge of F. D. Eason, with headquarters in Salem. It comprises the counties of Marion, Linn, Benton, Polk, Lincoln, Tillamook, and Clatsop, and parts of Columbia and Yamhill.

Division No. 3 is in charge of K. D. Lytle, with headquarters in Roseburg. It comprises the counties of Lane, Douglas, Coos, Curry, Josephine, and Jackson.

Division No. 4 is in charge of W. E. Chandler, with headquarters in Bend. It comprises the counties of Wasco, Sherman, Jefferson, Crook, Deschutes, Klamath, and Lake, and parts of Hood River, Gilliam, Wheeler, and Harney.

Division No. 5 is in charge of Paul Van Scoy, with headquarters in La Grande. It comprises the counties of Morrow, Umatilla, Union, Wallowa, Baker, Malheur, and Grant, and parts of Gilliam, Wheeler, and Harney.

Equipment Department

Responsibility for the Highway Department's equipment, valued at approximately \$1,200,000, rests with the Equipment Department. That department, in addition to exercising control over the purchase and distribution of equipment, operates the equipment repair shops and warehouses located at Salem, La Grande, Klamath Falls and Coquille. It, also, operates the storerooms through which the supplies for the various highway department operating units are handled.

The Equipment Department operates as a self-sustaining unit, making charges to the maintenance, construction and engineering units of the Highway Department for service rendered and supplies furnished. Charges for the use of equipment are made on a rental basis with adequate allowance for depreciation.

General supervision over the Equipment Department is exercised by E. A. Collier, Maintenance Engineer. Direct supervision of the work is in the hands of Emil F. Halik, Master Mechanic.

PROGRESS IN HIGHWAY IMPROVEMENT

General Summary

During 1943 and 1944, the State Highway Department has supervised construction or improvement work on fifty separate projects located on state primary and secondary highways, county roads and city streets. The construction or improvement work performed during the biennium, expressed in mileages of the various classes of work, is as follows:

TABLE IX

Classification of Work	Primary Highways (Miles)	Secondary Highways (Miles)	Other Roads and Streets (Miles)
Concrete paving	4	-----	-----
Bituminous paving	15	6	-----
Bituminous macadam surfacing	25	-----	3
Oil mat surfacing	37	112	21
Rock and gravel surfacing	57	98	37
Grading	45	37	32
Bridges (number of)	22	2	7

Of the fifty construction projects, sixteen of them were located on county roads and city streets lying outside of the state primary and state secondary highway systems, and thus do not affect the status of those two state systems which, in themselves, comprise the whole of the state highways which are under the sole jurisdiction of the State Highway Department.

The status of improvement of the two state highway systems at the close of 1944 is as follows:

TABLE X

Type of Improvement	Primary Highways (Miles)	Secondary Highways (Miles)
Concrete pavement	329	40
Bituminous pavement	521	148
Bituminous macadam surface	1,213	54
Oil mat surface	2,304	1,037
Rock and gravel surface	244	681
Graded only	98	179
Unimproved	96	257
Totals	4,805	2,396

The status of improvement of each of the 55 state primary highways, of each of the 116 state secondary highways and of

roads and streets other than state highways is shown in detail in Section Three of this report. On the state primary system, 91 per cent of the mileage has reached the status of an oiled or higher type of surface; while on the state secondary system 53 per cent of the aggregate length carries an oiled or higher type of surface.

During the two-year period covered by this report, the improvement of the state highway systems has been materially retarded due to properly-placed national emphasis on other activities pertinent to the prosecution of war. The comparatively few projects which have been completed during 1943 and 1944 are, to a large extent, those which were previously started or those which were undertaken at the instigation and expense of federal agencies to further the war effort. However, as a direct result of the present national emergency, a few state-financed projects were also undertaken and completed to strengthen and improve certain sections of highways on which extraordinarily severe service demands were being placed by logging and other industries engaged in war activities. In general, the progress shown in the improvement of the state highways during the biennium has, in contrast to the favorable records made in the preceding years, been markedly limited.

A brief review of the major projects completed during 1943 and 1944, with pertinent data relating to their contribution to the general improvement of the highway system, is given below.

Primary State Highways

On the primary state highway system, the improvements made during the biennium are represented by the completion of 22 state-supervised construction projects and 2 federal-supervised construction projects, which involved the construction of 21 new bridge structures (including three grade separation structures), the widening of 6 existing bridges and the improvement by new grading, surfacing, oiling and paving work of 91 miles of the highway system. These projects were located on 13 of the 55 primary highways and in 13 of the 36 counties in the state.

Expenditures made during the biennium for construction activities on the state primary system amounted to \$6,145,270.

A brief description of some of the major construction projects completed during the biennium on the state primary highway system is as follows:

Pacific Highway, U. S. Nos. 99W, 99E and 99: The Pacific Highway West (U. S. No. 99W) has been improved by the completion of three major projects during 1943 and 1944. The Front Avenue project in Portland, between Ankeny and Sheridan Streets, and more fully described in the preceding report, has been put into service by the completion of 0.7 mile of grading and paving work, and is now efficiently serving the City of Portland in caring for the urban traffic so vastly increased by the City's rapid war expansion. Beginning at Monmouth and extending southerly on new alignment for a distance of 9.09 miles to the vicinity of Camp Adair, a new section of highway providing a 24-foot bituminous macadam travelway has been constructed at federal request. In addition to the construction of a modern wide highway roadbed, this improvement also involved the construction of a new structure under the Valley & Siletz railway, a new structure over the Luckiamute River, two new smaller bridges and the widening of three existing bridges. The new section of highway, in addition to serving increased traffic to and from Camp Adair, has eliminated a railroad grade crossing, and the several sections of adverse grades and poor alignment previously experienced in traveling the replaced unit of old highway. The new construction will provide a safer and much-improved route for all future users of the highway. Likewise, a section of the highway, extending from a point near Lewisburg (in the vicinity of Camp Adair) southerly for a distance of 6.25 miles to Corvallis, has been widened and resurfaced with bituminous pavement, the work being performed at federal request to serve as an improved route to and from Camp Adair on the south, but also providing a permanent improvement for the benefit of all highway users by the elimination of the narrow width and high crown associated with the old pavement.



HIGHWAY 1E (UNION AVENUE) LOOKING NORTH TOWARD ITS
INTERSECTION WITH HIGHWAY 1W (DENVER AVENUE)
AT THE DENVER AVENUE TRAFFIC INTERCHANGE
NORTH OF PORTLAND



SWIFT SECONDARY HIGHWAY UNDERPASS AT THE DENVER AVENUE
TRAFFIC INTERCHANGE PROJECT NORTH OF PORTLAND

On the Pacific Highway East (U. S. No. 99E), a major improvement has been completed at the junction of Union Avenue, Denver Avenue and the Swift Road north of Portland by the building of a modern traffic interchange facility. For many years past, and especially during these war years, traffic congestion and delay at this junction has been steadily developing into a more and more serious situation. After careful study of all factors involved, a plan for the solution of this traffic congestion has been carried through to completion whereby each directional flow of traffic on the several highway routes has been afforded a separate travelway of bituminous pavement adequately lighted, signed and controlled. The heavy traffic experienced at this junction is now being provided for without congestion or delay. Three grade separation structures, a ramp approach structure and considerable mileage of modern road construction has been involved in this undertaking, and the improvement is an outstanding example of the modern trend of highway designing for safety and service. Between Halsey and Harrisburg, a project involving 8.8 miles of grade widening, 0.90 mile of 4-lane Portland cement concrete paving, 7.90 miles of asphaltic concrete paving and four new bridges is nearly completed as this report is written. Upon completion, this project will provide a 48-foot paved travelway with 6-foot paved parking facilities through the main part of Halsey, improved alignment immediately south of Halsey and a 24-foot paved travelway south to Harrisburg, a decided improvement over the old 16-foot rough pavement previously in service on this important unit of the highway system.

On that portion of the Pacific Highway which is south of Junction City (U. S. Highway No. 99), two projects of major importance have been completed during 1943 and 1944. Between Eugene and Springfield, the Judkins Point overcrossing structure over the tracks of the Southern Pacific Railway Company and a 1.08 mile section of modern 4-lane highway connecting it to the existing highway route, has been completed and is now serving the highway users with freedom from the hazards of the old railroad grade crossing and the previous existing traffic congestion occasioned by the narrow-

ness and twists of the former route. This improvement is one unit of a more comprehensive project which is expected ultimately to extend from the business center of Eugene to the present Springfield Junction. The biennium has also witnessed the completion of the Grave Creek-Jumpoff Joe Creek Section over Sexton Mountain in Josephine County, 6.28 miles in length. This project now provides a saving in travel distance of 1.16 miles and a considerable lessening of the time and effort previously required to travel the tortuous and narrow old pavement. The new construction consists of a 22-foot minimum width bituminous macadam travelway traversing the mountainous terrain on comparatively easy grade and curvature, with a 48-foot travelway for a distance of 1.69 miles to provide 4-lane service over the main summit where truck traffic might otherwise slow down the faster moving passenger vehicles.

Expenditures for construction activities on the Pacific Highway (U. S. Nos. 99W, 99E and 99) during the biennium amounted to \$3,535,052.

Columbia River Highway and Old Oregon Trail, U. S. No. 30: The biennium has witnessed the completion of the Tongue Point project just east of Astoria, a major improvement which is more fully described in the preceding biennial report. As completed, the new improvement, 0.98 mile in length, affords a 22-foot width of Portland cement concrete pavement flanked with 8-foot rock shoulders, and effects a saving in travel distance of 0.63 mile.

Expenditures made during the biennium for construction work performed on this route amounted to \$582,524.

John Day Highway, U. S. No. 28 and Oregon No. 19: During 1943, a section of highway 5.30 miles in length has been graded, surfaced and oiled on revised grade and alignment between Brogan and Jamieson at a cost of \$122,367.

Oregon Coast Highway, U. S. No. 101: Work performed on the Oregon Coast Highway during the biennium has included the contracting and completing of 3.21 miles of grading, 7.92 miles of surfacing, 11.49 miles of oiling, and 3.21 miles of bituminous macadam surfacing. The major project under-

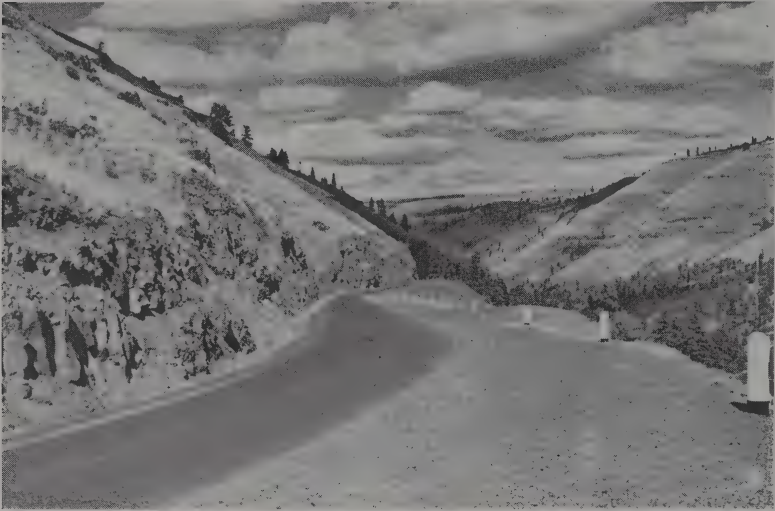
taken was the construction of a new section of highway, 3.21 miles in length, between the Lewis & Clark River, near Astoria, westerly to Warrenton. This project was initiated by the federal government to permit the closure of a portion of the old highway in the vicinity of the war-expanded Astoria Airport. The new route lies approximately 0.6 mile south of the old highway for a distance of about 1.5 miles on a location proposed to become a unit of the ultimate permanent relocation of the highway between Astoria and Seaside. Temporary connections to the old highway have been constructed at each end of the permanently located portion of the project and an access road to the Airport facilities, 0.71 mile in length has also been constructed, all at federal expense. This project provides a 24-foot bituminous macadam travelway throughout, flanked with 9-foot rock shoulders on the permanent location and 3-foot shoulders on the temporary connections thereto. Other projects on this highway included 4.71 miles of rock resurfacing in the vicinity of Cannon Beach and 11.49 miles of pavement surface re-sealing and restoration between Garibaldi and the Tillamook Air Base. The latter project was authorized and financed by the federal government to repair damage suffered by the highway due to federal-sponsored war activities in the vicinity of the Tillamook Air Base.

Expenditures on the Oregon Coast Highway for construction work performed during the biennium amounted to \$406,832.

Wallowa Lake Highway, Oregon No. 82: Between Elgin and Minam, the proposed ultimate improvement of the highway has been advanced by the completion of the Boswell Ranch-Follett Ranch Section, involving 2.78 miles of grading, surfacing and oiling to modern highway standards. This improvement affords a saving in travel distance of 0.82 mile over the old narrow highway and has extended the improved section of highway between the above termini to a length of 4.45 miles.

Expenditures for construction on this highway during the biennium amounted to \$76,024.

Santiam Highway, U. S. No. 20: The Public Roads Administration has completed the rock surfacing of a 7.63 mile



RECONSTRUCTION ON MINAM HILL SECTION OF WALLOWA
LAKE HIGHWAY, UNION COUNTY



CONCRETE VIADUCT AND ROCK WALL ON MINAM HILL SECTION
IN UNION COUNTY

section of this highway between Toll Creek and Slide Creek, thus adding another link to the ultimate improvement of the route within the National Forest and progressing toward a juncture with the westerly portion of the highway which is rapidly being improved under the supervision of the State.

In order to provide a roadway of suitable strength, width and curvature to properly care for the very heavy log hauling vehicles now in active service on this route, the State, at the request of the federal government, has recently contracted 3.3 miles of grade widening and 11.6 miles of surfacing and oiling between Foster and Canyon Creek. This project, estimated to cost \$198,000, will provide a heavy rock base on a 26-foot roadbed for use through the winter of 1944-45 and is expected to be completed to the status of an oiled surface in the early part of the summer in 1945.

Construction expenditures during the period covered by this report amounted to \$80,335.

Willamette Highway, Oregon No. 58: A project of major importance on the Willamette Highway, completed during the biennium, consisted of the grading and bituminous macadam surfacing of 3.98 miles of relocated highway between Goshen and Pleasant Hill, and also involved the construction of a new bridge over the Coast Fork of the Willamette River and three smaller bridges. The improvement provides a 22-foot travelway constructed to modern highway standards and shortens the narrow and winding old route by 0.34 mile.

Expenditures for construction work on this highway, during the two-year period, totalled \$348,821.

Klamath Falls-Lakeview Highway, Oregon No. 66: Under the supervision of the Public Roads Administration, work on the Quartz Mountain-Smalley Ranch Section, 5.34 miles in length has been progressing during the biennium and has now been brought to the status of a rock surfaced travelway. Due to exigencies of the war, it has not been feasible to perform the oiling work, but it is expected that such will be done in the ensuing months and thus bring the entire highway to the status of an oiled travelway by the summer of 1945.

Expenditures made for the above construction work during the biennium amounted to \$143,000.

Secondary State Highways

During the biennium, improvements were made on the secondary state highway system under 12 construction projects which involved the construction of 2 bridges, and new grading, surfacing, oiling and paving work on 149 miles of the system. These projects were located on 9 of the 116 secondary highways and in 8 of the 36 counties in the State.

A brief description of some of the major improvements made during the biennium on the secondary state highway system follows:

On the Swift Highway in Multnomah County, 0.25 mile of grade and pavement widening was performed on the Vanport Junction Section to facilitate the channelization and handling of traffic at the west entrance to Vanport.

On the Kernville-Euchre Mountain Section of the Siletz Highway in Lincoln County, 0.33 mile of grade widening and 12.50 miles of rock surfacing was performed to improve the narrow roadbed benched on the side of Euchre Mountain and to reinforce the travelway to care for heavy logging activities.

On the Crabtree Creek-Jordan Section of the Albany-Lyons Highway in Linn County, 2.87 miles of rock surfacing work and 6.16 miles of asphaltic concrete paving work were performed on two separate sections to strengthen the roadbed to properly care for extraordinarily heavy log hauling activities.

On the Wright Ranch-Milo Section of the Tiller-Trail Highway in Douglas County, 6.00 miles of grading, surfacing and oiling was performed on new and improved grade and alignment, thus extending the previously modernized roadway to a total length of 17 miles westerly from Canyonville.

The Heppner-Spray Highway in Morrow County has been improved by the placing of 14.96 miles of rock surfacing on the hitherto unsurfaced roadbed between Rhea Creek and Rock Creek.

Progress in the improvement of the I. O. N. Highway and the Jordan Valley Highway (comprising the present travelled

route of the I. O. N. Highway) in Malheur County, has been expedited during the biennium at the urgent request of the federal government, which considers the route to be of military importance for the economical conveying of supplies between Idaho, Nevada and California. The biennium has witnessed, on this route, the completion of 5.08 miles of regrading, 12.82 miles of grade widening, 12.89 miles of new grading on new alignment, the construction of one new bridge, 57.60 miles of rock and gravel surfacing and 92.69 miles of oiling. The route now affords a 20-foot oiled travelway throughout 119.1 miles of its total length of 121.4 miles, the northerly 2.3 miles now being under contract for surfacing and oiling, with completion thereof expected in the early summer of 1945.

Expenditures made for construction activities on the secondary state system during the biennium amounted to \$821,588.

County Roads

During the period covered by this report, 16 projects located in 17 counties were undertaken under State supervision on county roads and other roads and streets lying outside of the primary and secondary state highway systems. Twelve of these projects were constructed at the instigation of the federal government as necessary war measures, two were State-financed projects associated with the improvement of by-passes or alternate routes of the state highway systems and two were performed on city streets under special agreements with the cities involved.

A brief summary of the more important improvements made under the said 16 projects follows:

In Benton County, 1.46 miles of oiling work was performed on the Suver-Wells Road in the vicinity of Camp Adair to bring this road to proper condition for use by the heavy military traffic.

In Clatsop County, 0.71 mile of grading and surfacing, 0.10 mile of oiling and 0.61 mile of bituminous macadam was performed in the construction of a new road leading from the relocated Oregon Coast Highway, west of the Lewis & Clark River, northerly to the Astoria Airport.

In Coos County, 0.24 mile of grading, surfacing and oiling was constructed as an improvement of existing roads for access to the Naval Base at Empire; and 0.40 mile of grading,



THE NORTH BEND AIRPORT ACCESS ROAD, GRADED
AND PAVED IN 1943

surfacing and asphaltic concrete pavement was constructed as an improvement of existing city streets for access to the North Bend Airport.

In Jackson County, two projects directly involved with military activities at Camp White were undertaken and completed. As military maneuvers necessitated the closing of several roads in the northwest section of the military area, it became necessary to construct the Evans Creek-Sams Valley access road to the west and north thereof to provide an outlet for the affected residents in that vicinity. This project involved 8.08 miles of grading and rock surfacing on new alignment and will provide a permanent improvement to the county road system. The Tolo-Camp White access road was also constructed to provide better access for military traffic between the Pacific Highway and Camp White, and involved the construction of 2.65 miles of grading and surfacing and 2.70

miles of oiling as an improvement of existing county roads and the county road system.

The Madras-Redmond Air Base Target Range project in Jefferson County, comprising 1.42 miles of grading, surfacing and oiling, will remain as an improvement to existing roads after its use for military purposes is discontinued.

In Klamath County, 1.02 miles of grading and surfacing and 2.76 miles of bituminous macadam has been constructed partially along existing roads and partially on new alignment to provide suitable access to the Klamath Falls Air Station, the improvement being of permanent value to the City of Klamath Falls and to Klamath County.

The Lake County road system has been improved by the construction of 2 new bridges and 3.82 miles of grading and rock surfacing along existing roads to the Lakeview Airfield.

At Eugene, in Lane County, the State has completed a 0.07 mile section of grading and paving as an extension of Hilyard Street, between Eighth Avenue and Broadway (Pacific Highway) primarily to serve commercial traffic which hitherto had used the Eighth Avenue railroad crossing now closed in connection with the recently completed Judkins Point Section of the Pacific Highway.

On the Richardson Gap School county road near Scio, in Linn County, the State contracted and completed 0.25 mile of regrading and 2.12 miles of rock surfacing to bring the existing road into suitable condition as an alternate route of the Albany-Lyons secondary highway for log haulers, by-passing Scio.

In Multnomah County, two federal access projects on city streets in Portland have been constructed. The S. W. Grover Street project, consisting of 0.05 mile of grading, surfacing and asphaltic concrete paving has provided improved access to the Commercial Iron Works. The Yeon Avenue-Nicolai Street project consisted of grading and asphaltic concrete paving work in easing-off and cutting back sharp turns on streets used for access to the Willamette Iron & Steel Co.

In Polk County, the work performed on county roads was occasioned by military activities in the vicinity of Camp Adair, and involved three projects as follows: The oiling of 1.57 miles of the Suver-Wells Road; the oiling of 1.06 miles of the Independence-Granger Road; and the construction of three new bridges, 12.51 miles of grading and rock surfacing and 6.01 miles of 20-foot oil mat wearing surface on the Monmouth-Pedee Access Road Project. This latter project involved the



HEAVY CUT ON THE MONMOUTH SECONDARY HIGHWAY ALONG
THE NORTH BOUNDARY OF CAMP ADAIR IN POLK COUNTY

reshaping of 2.24 miles of existing road, the grading on new alignment of 4.29 miles of roadbed and the rock surfacing of 6.53 miles of road on the Monmouth-Fern Corner county route; and the construction of an entirely new oiled surface roadbed 5.98 miles in length between Burns Corner and Pedee. The improvements made on the Monmouth-Pedee Access Road Project were required to replace existing county roads and secondary state highways closed by military maneuvers in the vicinity of Camp Adair and will remain as permanent improvements to the system of roads in the county.

In Umatilla County, a new roadbed has been constructed from the Columbia River Highway one mile east of Umatilla

northerly to the Umatilla Oil Depot on the Columbia River. This project involved the construction of 1.23 miles of grading, surfacing and oiling on new alignment and serves as an outlet for petroleum products shipped by water route from down-river areas for use in the eastern portions of the State.

On behalf of the City of Sheridan in Yamhill County, and at the sole expense of the City, the State has supervised the oiling of 4.86 miles of existing rock surfaced streets in that city.

Expenditures made during the biennium for construction of the various projects on roads and streets not on the state highway systems amounted to \$1,485,902.

CLASSES OF HIGHWAYS

The classes of highways with which the Highway Commission is normally concerned, and in connection with which it normally expends the state and federal funds which are entrusted to it, are as follows:

1. Primary State Highways.
2. Secondary State Highways.
3. Primary Federal Aid Highways.
4. Secondary Federal Aid Highways.
5. Public Lands Highways.
6. Federal Forest Highways.
7. County Roads.

During present wartime conditions, the Commission is concerned also with the following road classifications:

1. Access Roads.
2. Strategic Network Highways.
3. Flight Strips.

Classification of highways as above indicated is made necessary by the several plans of highway financing that have been developed during the years by the State and Federal Government. Each plan of financing limits itself to particular highways or kinds of highways and thus establishes a new classification. It is possible for a highway to be in two or more classes. For instance, a primary state highway may also be a primary federal aid highway. Likewise, a road may be both a county road and a secondary federal aid highway.

Brief descriptions of these several different classes of highways are given in the paragraphs which follow.

Primary and Secondary State Highways. State highways are those highways for which the State has assumed the responsibilities of maintenance and improvement. In the beginning, all state highways were of the same class, but when the point was reached where the system included a complete network of the main arterial highways, it became desirable to have a separate system for highways which serve as feeders to the main network rather than as main lines. The main arterial system was, therefore, designated the Primary State Highway System, and a second system, called the Secondary State Highway System, was set up to receive such additional highways as might not be considered of sufficient importance to justify inclusion in the Primary System.

Additions to the Primary System may be made by the state legislature or by the State Highway Commission. Additions to the Secondary System may be made by joint action of the State Highway Commission and the County Court of the county in which the highway is situated. The conditions under which state moneys may be expended on primary and secondary highways are the same for both classes. Counties bear no financial responsibility for the maintenance or improvement of either class.

The present mileage of Primary Highways is 4,805. The present mileage of Secondary Highways is 2,396. Complete listings of the highways included in the primary and secondary systems are given in Tables 25 to 28 in Section Three of this report. A small scale map showing the highways which comprise the two systems is also included in Section Three.

Listings of expenditures made on the primary and secondary highways appear in Tables 11 to 16, inclusive, in Section Three.

Primary Federal Aid Highways. The Primary Federal Aid System of highways comprises those highways which have been designated under authority of the Federal Highway Act of 1921 as highways eligible to have regular federal aid funds expended upon them. The highways in this system are selected

and designated by mutual agreement between the Highway Commission and the Federal Public Roads Administration. The total mileage of highways of this class is limited to 8 per cent of the total mileage of public roads in existence in 1921, which places the limit for the State of Oregon at 3,346.1 miles, exclusive of miles within national forests and other federal reservations and exclusive of miles within cities. The total mileage in the system at present is 3,287.9 miles, plus 522.7 miles which are within national forests and reservations and 134.4 miles within cities having populations of 2,500 or more.

Regular federal aid funds allotted to the State of Oregon for use on primary federal aid highways for the fiscal years 1939 to 1943 were as follows:

Fiscal year 1939	\$2,048,413
Fiscal year 1940	1,638,823
Fiscal year 1941	1,884,937
Fiscal year 1942	1,647,906
Fiscal year 1943	1,649,132

Because of the war, no allotments of regular federal aid funds have been made for years subsequent to 1943.

A complete listing of the Primary Federal Aid Highways in Oregon is given in Table XV in Section II of this report.

Secondary Federal Aid Highways. The Secondary Federal Aid System of highways includes those highways which have been designated under authority of federal acts and regulations as highways eligible to have federal aid secondary highway funds expended upon them. The highways in this system are selected and designated by the Highway Commission subject to limitations and regulations set up by the Federal Public Roads Administration. County roads, as well as state highways, are eligible for consideration.

The total mileage in the secondary federal aid system is limited to 10 per cent of the total mileage of public roads in the state. Thus, in Oregon the limiting mileage is 4,933. The mileage in the system as of the present time is 1,148, of which 172 miles are primary state highways, 585 miles are secondary state highways, and 391 miles are county roads.

Federal aid funds allotted to the State of Oregon for use on secondary federal aid highways for the fiscal years 1939 to 1943 were as follows:

Fiscal year 1939	\$409,683
Fiscal year 1940	245,823
Fiscal year 1941	245,861
Fiscal year 1942	288,383
Fiscal year 1943	288,598

Public Lands Highways. Public Lands Highways are highways or parts of highways which, because of their being on unappropriated and unreserved public lands, Indian reservations or other federal reservations, are eligible to have Public Lands Highway Funds expended upon them. No definite system has been designated for this class of highways, but to date use of the Public Lands Highway Funds has been confined in large part to the Warm Springs Highway across the Warm Springs Indian Reservation and the I. O. N. Highway in Malheur county.

Federal authorizations of Public Lands Highway Funds for the fiscal years 1939 to 1943, and the amounts of each that have been released for use to date, are as follows:

	Authorized	Released
Fiscal year 1939	\$167,394	\$167,394
Fiscal year 1940	60,542	60,542
Fiscal year 1941	129,201	64,601
Fiscal year 1942	96,839	64,559
Fiscal year 1943	96,000	None

Federal Forest Highways. The Federal Forest Highway System comprises such main highways within or across national forests as have been designated by the Federal Forest Service, the Public Roads Administration and the State Highway Commission for improvement with federal forest highway funds. A list of the highways included in this system is given in Table XVII.

Construction work financed with Forest Highway Funds is contracted and supervised by the Public Roads Administration. However, the Highway Commission has a voice in the selection of the projects to be undertaken, and in matters of location and standards of construction.

Because of the war effort, expenditures of forest highway funds for the years 1941, 1942 and 1943 have been very small.

For a time prior to 1941, the expenditures ran about \$1,200,000 per year.

Access Roads. An access road is any road or street giving access to a military establishment, a war industry, or a mine essential to the war effort. Expenditures of federal access road funds are limited to roads of this class. The classification is probably a temporary one as it is unlikely that federal funds for access roads will be available beyond termination of the war.

Work financed with access road funds is performed under supervision of the Highway Commission. Allocations of access road funds are made only as the need for access road improvement develops. The funds are not allotted to the states in



THE SEVEN DEVILS CHROME MINE ACCESS ROAD IN COOS COUNTY,
GRADED AND SURFACED BY FEDERAL FUNDS

accordance with a formula, as are most other federal funds. Access road projects undertaken in Oregon to date amount to \$5,230,353, of which amount the federal government is contributing \$4,736,853.

Strategic Network Highways. Strategic network highways are arterial highways comprising a network suitable to meet military requirements. Highways for inclusion in this net-

work are selected by the U. S. War Department. The Highway Commission and the Federal Public Roads Administration have no voice in the selection other than in an advisory capacity.

The tentatively adopted strategic network for Oregon includes approximately 60 per cent of the highways in the primary state highway system, the total mileage of network highways being 2,800. Practically all of the strategic network highways are a part, also, of the primary federal aid system.

There has been but one allotment of strategic network funds. That allotment was made late in 1941, one-half having been allotted to the state in accordance with the formula applicable to regular federal aid funds and one-half having been assigned for allotment by the Federal Works Administrator without regard to any formula. Of the first mentioned half, Oregon was allotted \$412,283. Of the second half, Oregon has had allotted to it a total of \$1,136,400.

Flight Strips. Flight strips are temporary landing fields for airplanes. They are described here for the reason that their construction is entrusted to State Highway Departments, the same as is the construction of most classes of federal roads. They are associated with roads, also, for the reason that the common practice is to build them alongside of highways.

Flight-strip funds have been allotted without regard to any established formula. Allotments to Oregon, to date, amount to approximately \$1,200,000, and with that sum, four strips have been constructed, one in western Oregon and three in eastern Oregon.

County Roads. The greater part of the road or highway system in the State of Oregon consists of county roads, the control and responsibility for which are exercised by the county courts or boards of county commissioners of the 36 counties.

There are approximately 30,000 miles of county roads, and the maintenance, construction, and reconstruction of these roads present a problem of considerable magnitude. Before the creation of a state highway system, all public roads were

county roads and their improvement and upkeep were an obligation of the counties. However, since 1917, when the state highway system was created, the counties have been relieved of a considerable part of the original burden, as the roads which were taken over as state highways are now maintained by the State. The Federal Government also has assumed responsibility for a considerable mileage of former county roads and trails which are located in national forests, national parks, and Indian reservations.

Funds expended on county roads prior to 1917 were largely raised by property taxes, and the improvement of roads was slow until the advent of the automobile, which brought about a demand for the construction and maintenance of roads or highways which would serve traffic operating at considerably higher speeds than the old horse-drawn vehicles. Since 1917, the counties have made great strides in the improvement of the county road system. This has been due in large measure to better construction methods, to assistance from funds received from state automobile license fees and state gas tax revenues, to better engineering in both location and construction, and to improvements made on county roads by the State and Federal Government with federal and state cooperative funds of various kinds.

Relief funds provided by the Federal Congress in 1935 for highway construction, federal secondary and feeder road funds provided by the act of 1936, federal access road funds provided in 1941 and later as a war measure, and in some cases state funds, have assisted the counties in the improvement of many roads which could not have been improved by the counties alone for many years. Where the expenditure of these federal funds has been entrusted to the State Highway Department, the state has made the surveys and performed the construction engineering without cost to the counties, and has in most cases participated in the construction cost. The counties have, in nearly all cases, provided the necessary rights of way and assumed responsibility for maintenance subsequent to construction.

As mentioned elsewhere in this report, 391 miles of county roads are included in the secondary federal aid highway

system. Also, by act of the state legislature in 1931, a system of secondary state highways was created and 2,396 miles of county roads have been placed on that system. Responsibility for the improvement and maintenance of the roads in this last mentioned system has been assumed by the state, thus relieving the counties of that very considerable financial burden.

The counties at this time are generally in good financial condition with relation to their road maintenance and construction problems. From 1920 to 1930 many counties bonded themselves, both for county road construction and for cooperation in the construction of state highways. During the last decade most of these counties have retired their bonds and are thus relieved of interest and bond payments. During the last two and one-half years, curtailment of construction and maintenance operations made necessary by war conditions, has enabled the counties to build up reserve funds to be used in the construction of county roads in the postwar period. At the close of the biennium, reports from the counties indicate the total of such funds to be approximately \$8,000,000.

Reports submitted by the counties for the 1943-1944 biennium indicate that expenditures on county roads by the counties during that period have amounted to \$8,483,865.09.

FINANCIAL REPORT

By Office Engineering Department

S. H. PROBERT, *Office Engineer*

Sources of State Highway Income

State funds now being utilized in the construction, maintenance and operation of state highways are derived from road-user taxes and fees as follows:

1. Gasoline tax.
2. Diesel fuel tax.
3. Motor vehicle license fees and operators fees.
4. Motor transportation fees.
5. Fines for traffic law violations.

Of the revenues yielded by these taxes and fees, 15.7 per cent is allotted to the counties for use on county roads, and 5.0 per cent is allotted to the cities for use on city streets. From these revenues, also, an additional amount approximating 2.5 per cent is appropriated by the state legislature for use by the State Police Department. The remaining 76.8 per cent is placed at the disposal of the State Highway Commission for use on state highways.

The State funds above referred to are supplemented each year by co-operative funds from the Federal Government and, to a very limited extent, by co-operative funds from counties and other agencies.

The following tabulation gives an idea of the amounts that have been received from state and federal sources during the past few years for use on state highways, and indicates the trends in those amounts during the years immediately preceding and immediately following the entrance of the United States into World War II.

Calendar Year	State Funds	Federal Funds	State Plus Federal Funds
1938	\$10,668,916	\$ 2,873,802	\$13,542,718
1939	11,771,365	2,652,476	14,423,841
1940	12,759,332	2,926,250	15,685,582
1941	15,093,638	2,810,895	17,904,533
1942	13,450,739	2,273,617	15,724,356
1943	11,738,155	4,341,584	16,079,739

TABLE XI
Incomes for Calendar Years 1943 and 1944

Source of Income	1943 (Actual)	1944 (Estimated)
<i>State Funds:</i>		
Motor vehicle license fees (net)	\$ 3,234,581	\$ 3,302,000
Gasoline tax (net)	9,648,355	9,240,000
Diesel fuel tax (net)	65,082	240,000
Motor transportation fees (net)	1,735,854	1,860,000
Fines for traffic law violations	54,690	86,000
Cash discounts	2,908	4,000
Totals	\$14,741,470	\$14,732,000
Less contributions to state police	390,899	381,000
Less contributions to counties	2,612,416	2,312,000
Less contributions to cities		736,000
Total receipts of state funds for highway purposes	\$11,738,155	\$11,303,000
<i>Cooperative Funds:</i>		
1942 and prior federal funds	\$ 655,174	\$ 744,000
1943 federal aid funds	518,245	616,000
1943 federal secondary funds		38,000
1943 federal grade separation funds	175,424	53,000
Access road federal funds	2,319,979	1,115,000
Federal strategic highway funds		750,000
Federal flight strip funds	672,762	435,000
County cooperative funds	1,550	2,000
Miscellaneous cooperative funds	32,500	25,000
Total receipts of cooperative funds	\$ 4,375,634	\$ 3,778,000
Total, all receipts	\$16,113,789	\$15,081,000
Balance on hand, beginning of year (exclusive of revolving fund)	\$ 2,052,691	\$ 4,662,000

The increase in the amount of federal funds received during 1943 over the amounts received during preceding years came about as a result of rather large expenditures of federal funds made that year on war emergency projects, such as flight strips, access roads to war industry plants and access roads to military establishments. Much of this expenditure was on county roads and city streets not a part of the state highway system.

The falling-off in state fund receipts which began in 1942 as a result of war conditions, continued into 1944, in which year the total of such receipts is expected to be in the neighborhood of \$11,300,000. Little, if any, increase in the amount of these receipts is expected before 1946.

TABLE XII

Expenditures for Calendar Years 1943 and 1944

Class of Expenditure	1943 (Actual)	1944 (Estimated)
<i>Capital Outlays:</i>		
1942 and prior federal projects	\$ 465,147	\$ 50,000
1943 federal aid projects	498,289	209,000
1943 federal grade separation projects	185,110	42,000
Access road projects	1,646,455	1,305,000
Federal strategic highway projects	420,215	1,172,000
Federal flight strip projects	1,006,016	36,000
State construction projects, primary	177,197	86,000
State construction projects, secondary	147,679	71,000
State construction projects, city streets		25,000
Cooperation in forest road work		Cr. 37,000
Minor betterments, primary	79,185	50,000
Minor betterments, secondary	23,324	15,000
Surveys, primary	189,944	250,000
Surveys, secondary	12,757	60,000
Surveys, county roads	17,574	25,000
Engineering county construction	725	
Property acquisition, general expense	37,813	40,000
Purchase of rights of way, quarries, etc.	307,867	310,000
Purchase of parks	25,323	119,000
Improvement of parks	430	
Improvement of maintenance stations	5,602	5,000
Improvement of other properties	16,676	20,000
Equipment purchases, sales and depreciation ..	Cr. 197,157	Cr. 60,000
Sub-totals, capital outlays	\$ 5,066,171	\$ 3,793,000
<i>Maintenance:</i>		
Special maintenance, primary	\$ 755,583	\$ 1,200,000
Special maintenance, secondary	81,512	200,000
General maintenance, primary	2,866,898	3,200,000
General maintenance, secondary	875,321	940,000
Maintenance of county roads, signs, etc.	43,605	25,000
Maintenance of city streets	141,963	25,000
District maintenance superintendence	131,624	145,000
Sub-totals, maintenance	\$ 4,896,506	\$ 5,735,000
<i>Miscellaneous:</i>		
Administration and general supervision	\$ 431,598	\$ 430,000
Planning and traffic surveys	52,308	50,000
Travel and information bureau	12,508	25,000
Radio communication system	9,429	10,000
Operation of parks	33,360	41,000
Operation of maintenance stations, etc.	25,875	25,000
Operation of drawbridges and ferries	66,455	80,000
Miscellaneous	419,048	137,000
Service and clearing accounts	19,945	
Bond interest and maturities	2,470,819	2,226,000
Sub-totals, miscellaneous	\$ 3,541,345	\$ 3,024,000
Total, all purposes	\$13,504,022	\$12,552,000

A fully detailed statement of the actual income for the calendar year 1943, and the probable income for the calendar year 1944, is given in the accompanying Table XI.

Disbursements, 1943 and 1944

A statement listing the disbursements made or expected to be made during the calendar years 1943 and 1944 appears in Table XII. For some purposes, however, the following summarization of that table will be found more convenient:

Item	1943 (Actual)	1944 (Estimated)
Bond interest and principal	\$ 2,470,819	\$ 2,226,000
Maintenance of highways	4,896,506	5,735,000
Construction, rights of way and other capital expense	5,066,171	3,793,000
Operation and miscellaneous	1,070,526	798,000
	\$13,504,022	\$12,552,000

The extent to which expenditures have been reduced as a result of war conditions is made evident by the fact that in 1941 the total expenditure was \$17,754,986, and the expenditure for construction, rights of way, et cetera, was \$10,296,363. These comparisons do not indicate fully the retrenchment in the work program, as the war has in many respects operated to increase expenditures. Maintenance costs have been greatly affected by increased costs of labor and materials; also, by increased wear and tear on the highways due to heavy war-time truck traffic. Expenditures made for construction are, in almost their entirety, expenditures made necessary by the war effort. In relatively small part are they expenditures for highway improvements that are effective as parts of the State's highway program.

It is to be noted that the expenditure made in 1943 is approximately \$2,610,000 less than that year's income of \$16,113,789; also, that the expenditure estimated for 1944 is approximately \$2,530,000 below the income expected for 1944. These savings, totalling \$5,140,000 for the two-year period, will be held for use during the postwar period when they will be needed to meet the State's obligations in connection with the contemplated postwar highway program.

Anticipated Incomes for 1945 and 1946

As the highway income for the years 1945 and 1946 will be very greatly affected by the course of the war, it has been

TABLE XIII
Anticipated Incomes for Calendar Years 1945 and 1946

Source of Income	1945	1946
<i>State Funds:</i>		
Motor vehicle license fees (net)	\$ 3,200,000	\$ 3,200,000
Gasoline tax (net)	9,300,000	11,000,000
Diesel fuel tax (net)	220,000	210,000
Motor transportation fees (net)	1,700,000	1,625,000
Fines for traffic law violations	65,000	55,000
Cash discounts	4,000	6,000
Totals	\$14,489,000	\$16,096,000
Less contributions to state police	336,000	432,000
Less contributions to counties	2,312,000	2,274,000
Less contributions to cities	724,000	713,000
Total estimated receipts of state funds for highway purposes	\$11,117,000	\$12,677,000
<i>Cooperative Funds:</i>		
1942 federal secondary funds	\$ 70,000	\$
1943 federal aid funds	230,000	.....
1943 federal secondary funds	250,000	.....
Access road federal funds	900,000	.....
Federal strategic highway funds	750,000	.....
Federal flight strip funds	50,000	.....
Federal advance engineering funds	165,000	.....
Federal postwar funds	1,585,000	4,800,000
County cooperative funds	2,000	2,000
Total estimated receipts of cooperative funds	\$ 4,002,000	\$ 4,802,000
Total, all estimated receipts	\$15,119,000	\$17,479,000
Estimated balance on hand, beginning of year	\$ 7,191,000	\$ 6,413,000

necessary in preparing estimates of income for those years to make assumptions as when the war will end. The end of the war in the European theatre is expected to signal the release of federal funds for the contemplated postwar program. The end of the war in the Pacific is expected to be reflected by a rapid increase in gasoline tax income. In preparing the estimates of income which appear in Table XIII, the assumption has been made that war in the European theatre will end in the early summer of 1945 and that war in the Pacific theatre will end in the late fall of the same year.

On the basis of the above-stated assumptions, the state fund income for 1945 should differ little from the state fund income of 1944, but the income for 1946 should exceed the 1944 income by about \$1,500,000. On the same assumption, it is reasonable to expect that \$1,585,000 of federal postwar funds can be collected during 1945 and \$4,800,000 in 1946. Should the assumptions relative to the war's end prove too optimistic,

STATE HIGHWAY EXPENDITURES 1917-1944

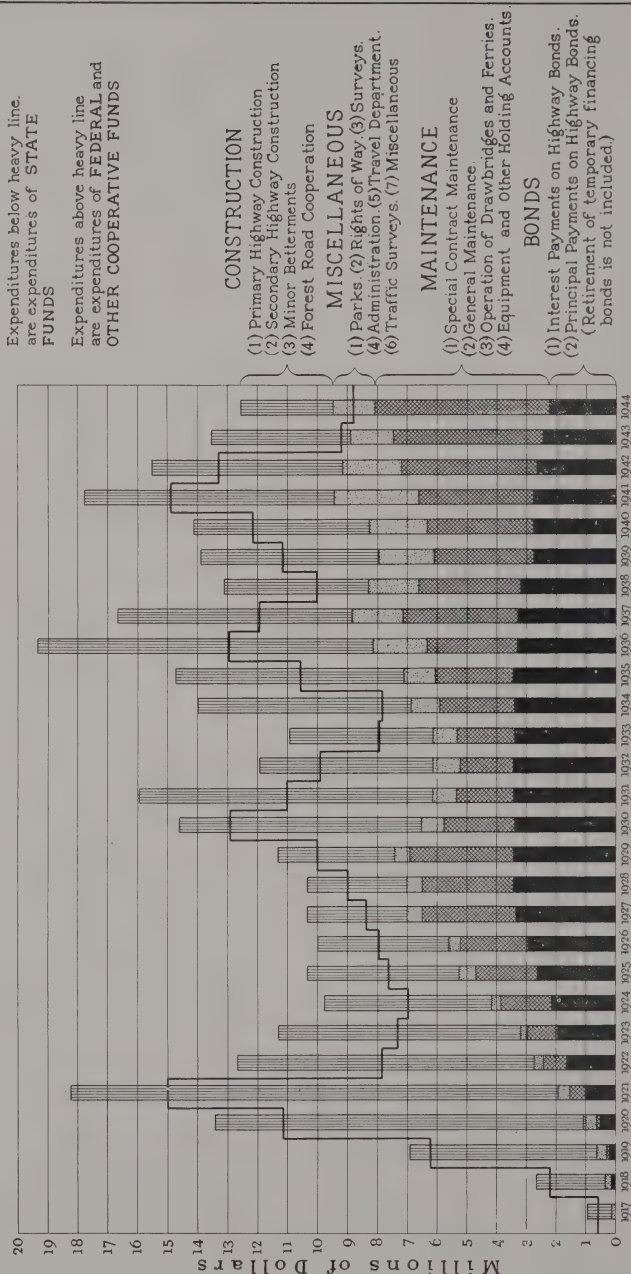


TABLE XIV
Expenditure Budgets for Calendar Years 1945 and 1946

Class of Expenditure	1945	1946
<i>Capital Outlays:</i>		
1942 federal secondary projects	\$ 76,000	\$
Federal access road projects	200,000	.....
Federal strategic highway projects	300,000	.....
Federal postwar projects	4,824,000	10,500,000
State construction projects (primary)	250,000	300,000
State construction projects (secondary)	150,000	200,000
Cooperation in forest road work .....	.....	100,000
Minor betterments (primary)	100,000	200,000
Minor betterments (secondary)	75,000	100,000
Surveys (primary)	200,000	200,000
Surveys (secondary)	100,000	100,000
Surveys (county roads)	50,000	50,000
Property acquisition, general expense	40,000	50,000
Purchase of rights of way, quarries, etc.	775,000	930,000
Purchase and improvement of parks	110,000	135,000
Maintenance station buildings, etc.	210,000	220,000
Equipment, purchase, sale and depreciation ..	.....	50,000
Contingency reserve, construction	200,000	200,000
Sub-totals, capital outlays	\$ 7,660,000	\$13,335,000
<i>Maintenance:</i>		
Special maintenance (primary)	\$ 800,000	\$ 900,000
Special maintenance (secondary)	200,000	250,000
General maintenance (primary)	3,400,000	3,500,000
General maintenance (secondary)	1,000,000	1,100,000
Maintenance of county roads	25,000	25,000
District maintenance superintendence	150,000	155,000
Contingency reserve, maintenance	100,000	100,000
Sub-totals, maintenance	\$ 5,675,000	\$ 6,030,000
<i>Miscellaneous:</i>		
Administration and general supervision	\$ 450,000	\$ 500,000
Planning and traffic surveys	60,000	100,000
Travel and information bureau	50,000	100,000
Operation of parks	60,000	80,000
Operation of maintenance stations	30,000	30,000
Operation of drawbridges and ferries	85,000	85,000
Truck load inspection	70,000	70,000
Bond interest and principal	1,682,000	1,221,000
Miscellaneous	75,000	85,000
Sub-totals, miscellaneous	\$ 2,562,000	\$ 2,271,000
Totals, all purposes	\$15,897,000	\$21,636,000

the 1945-1946 income to the Department from state and federal sources may fail in meeting the estimates by several millions of dollars. In that event, there will of necessity be a further postponement of the postwar construction program and continued conservation of state funds for use when construction operations may again be resumed.

Expenditure Budgets for 1945 and 1946

The expenditure budgets for the calendar years 1945 and 1946, as shown in Table XIV, are based on the same optimistic assumptions in regard to the termination of the war, as are stated in the foregoing discussion of estimates of income. On that basis, the estimates contemplate construction expenditures on postwar projects totalling \$4,824,000 for 1945 and \$10,500,000 for 1946.



HIGH BRIDGE OVER CROOKED RIVER CANYON ON THE DALLES-CALIFORNIA HIGHWAY IN PETER SKENE OGDEN PARK, JEFFERSON COUNTY

It will be noted that estimated expenditures exceed expected income by approximately \$800,000 in 1945, and by approximately \$4,150,000 in 1946. The expenditure of these amounts in excess of incomes is made possible by the surplus that has been built up during war years, which surplus, at the beginning of 1945, will amount to about \$7,200,000.

Federal Participation in Financing of State Highway Work

Much of the work being performed under the direct control and supervision of the State Highway Commission is financed in part or in whole with funds provided by the Federal Government. Federal funds thus utilized are of several

classes, each class being subject to such special use and to such special limitation and control as may be specified for it by the Congress. The several classes that have been active during recent years are as follows:

1. Regular Federal Aid Funds.
2. Federal Secondary Highway Funds.
3. Federal Grade Crossing Funds.
4. Access Road Funds.
5. Strategic Highway Network Funds.
6. Flight Strip Funds.
7. Advance Engineering Funds.

The first three of these classes of funds were made available year after year for many years, prior to the war, with comparatively slight changes in annual amounts and with few changes in basis of application. Their purpose is to assist the states in the development of road systems required to meet peacetime requirements. The last four classes were set up in 1941, and their purpose is to make possible, and to expedite, road and street improvements particularly essential to defense activities and the war effort.

Work under the wartime group of funds consists primarily of improvements giving access to military establishments, war industries and mines, of the construction of emergency airplane landing fields (called flight strips), and of such improvements on the main highways comprising the "strategic network" as are of particular necessity from a military standpoint.

Federal allotments for the peacetime group of funds was discontinued during the war period, but it appears probable that the making of allotments for that group will be resumed when the war is terminated.

Regular federal aid funds and secondary highway funds are usually apportioned among the states—one-third in proportion to population, one-third in proportion to area and one-third in proportion to mileage for rural delivery and star mail routes. The usual basis for the apportionment of grade separation funds is—one-half in proportion to population, one-fourth in proportion to mileage in the federal aid highway system and one-fourth in proportion to mileage of railroads.

Advance engineering funds and one-half of the strategic network funds are apportioned among the states in accordance with the same formula as applies to regular federal aid funds and secondary highway funds. The other one-half of the strategic network funds, the access road funds and the flight strip funds are not apportioned among the states on any specified basis. They are assigned to projects on a discretionary basis, according to need, and without regard to state boundaries.

Federal funds for highway work are not turned over to the states in advance of construction. Instead, they are paid to the states in the form of reimbursement during and after the period that the work is in progress. They are paid only on projects for which the plans have been previously approved by the Public Roads Administration and for which the work is conducted in accordance with the applicable requirements established by the Public Roads Administration. The percentages of total cost to which the federal participation has been limited during recent years are as follows:

Class of Funds	Limit of Federal Cooperation	
	Basic	For Oregon
Regular federal aid funds	50%	*62.05%
Federal secondary highway funds	50%	*62.05%
Federal grade crossing funds	100%	100.00%
Federal lands highway funds	100%	100.00%
Access road funds	100%	100.00%
Strategic network funds	75%	81.02%
Flight strip funds	100%	100.00%
Advance engineering funds	50%	62.05%

* This percentage may be increased to 81.02% on projects which are on the strategic highway network.

Oregon's variations from the basic limits above indicated come about through a provision which grants highway percentages of co-operation to those states in which unappropriated public lands comprise more than five per cent of the total area.

Federal aid apportioned to a state must be placed under contract within one year after the close of the fiscal year for which the apportionment is made. Amounts not so contracted revert to the federal government to be redistributed among

all of the states. Under this arrangement, the State has about three years in which to use the apportionment for a given year.

Oregon's allotments of regular federal aid funds, federal secondary highway funds and grade crossing funds, for the fiscal year 1943, were as follows:

Regular federal aid funds	\$1,649,132
Federal secondary highway funds	288,598
Federal grade crossing funds	228,533

Oregon's allotments of strategic network funds and advance engineering funds for the period of the war emergency, were as follows:

Strategic network funds	\$412,283
Advance engineering funds	164,913

In addition to the specific fund allotments above listed, Oregon has been granted approvals for access road projects requiring approximately \$4,735,000 of federal funds, strategic network projects requiring approximately \$1,460,000 of federal funds, and flight strip projects requiring approximately \$1,200,000 of federal funds.

The classes of projects to which the use of the several kinds of federal funds are limited are as described in the paragraphs which follow.

Regular Federal Aid Funds: Regular federal aid funds can be applied only on permanent improvement projects on highways included in the Federal Aid Highway System. A map of the system accompanies this report, and in the accompanying Table XV there are given the numbers, names, and lengths of the highways which comprise the system. The total mileage of federal aid highways is 3,945.0 miles, which is approximately 80 per cent of the total mileage in the Primary State Highway System.

Federal participation in the cost of regular federal aid projects is, at present, limited to 81.02 per cent for projects on the strategic network, and to 62.05 per cent for projects not on that network.

Federal Secondary Highway Funds. Federal secondary highway funds are available for use only on state highways and county roads included in the federal secondary highway

TABLE XV

Mileages of Primary Federal Aid Highways

Federal Route No.	Highway	Total Federal Aid Mileage Inclusive of Miles Within Cedillo Canals Reservations	Mileage Within Cedillo Canals of 2,500 or More	Mileage Within National Forests	Mileage Within Indian Reservations	Total Federal Aid Mileage Exclusive of Miles Within Cedillo Canals Reservations
1	Astoria to Ontario	511.33	31.89	29.55	*24.44	425.45
2	Oregon Coast Highway	394.02	10.24	46.38	†0.29	337.11
3	Pacific Highway	337.85	23.12	7.53	.....	307.20
4	The Dalles-California Highway	283.11	4.73	24.70	43.18	210.50
5	Eugene to Ontario	385.00	.....	86.01	.....	298.99
6	Arlington to Rock Creek	123.63	.....	.....	.....	123.63
7	La Grande to Enterprise	66.25	0.46	.....	.....	65.79
8	Heppner Junction to Pendleton‡	.....	.....	.....	.....	.....
9	Pacific Highway West	116.04	13.34	.....	.....	102.70
10	Albany-Corvallis Highway	10.50	0.65	.....	.....	9.85
11	McMinnville-Tillamook Highway	48.68	.....	13.44	.....	35.24
12	Sherman Highway	69.00	.....	.....	.....	69.00
13	Ft. Klamath to Crater Lake	6.75	.....	0.99	0.98	4.78
14	Coos Bay-Roseburg Highway	61.81	0.29	.....	.....	61.52
15	Green Springs Highway	56.34	0.98	1.57	.....	53.79
16	Fremont Highway	158.23	.....	14.25	.....	143.98
17	Redwood Highway	42.34	.....	0.93	.....	41.41
18	Boardman to Wallula	39.49	.....	.....	.....	39.49
19	Pendleton to Washington State Line	36.60	.....	.....	.....	36.60
20	Umpqua Highway	50.13	.....	0.57	.....	49.56
21	Bend to Burns	131.71	2.59	.....	.....	129.12
22	Corvallis-Newport Highway	56.91	0.99	.....	.....	55.92
23	Salmon River Highway	21.92	.....	.....	.....	21.92
24	Portland to Maupin	99.21	6.69	37.04	.....	55.48
25	Siuslaw Highway	67.32	.....	17.60	.....	49.72
26	East Portland-Oregon City	19.51	9.36	.....	.....	10.15
27	Wolf Creek Highway	65.52	2.31	.....	.....	63.21
28	Cannon Beach Road	20.96	.....	.....	.....	20.96
29	Willamette Highway	87.17	.....	64.12	.....	23.05
30	Pendleton to John Day	122.15	1.73	16.67	.....	103.75
31	Burns to Vale	114.97	1.01	.....	.....	113.96
32	Tualatin Valley Highway	42.36	1.82	.....	.....	40.54
33	Klamath Falls-Weed Highway	14.30	.....	.....	.....	14.30
34	Boyer to Dolph	5.60	.....	4.90	.....	0.70
35	Tillamook to Banks	54.72	0.48	.....	.....	53.84
36	Pendleton to Cold Springs	18.50	.....	.....	.....	18.50
37	Santiam Highway	101.30	0.48	53.53	.....	47.29
38	Fourth Street entrance to Portland§	.....	.....	.....	.....	.....
39	Base Line Road	13.00	4.58	.....	.....	8.42
40	Lombard Street	10.90	7.90	.....	.....	3.00
41	82nd Avenue	13.80	6.20	.....	.....	7.60
42	West Portland-Hubbard Highway ..	17.50	.....	.....	.....	17.50
43	Front Avenue, Portland	2.60	2.60	.....	.....	.....
44	Warm Springs Highway	46.40	.....	7.00	27.00	12.40
Totals		3,945.03	134.44	426.78	95.89	3,287.92

* Includes 2.20 miles in Celilo Canal Reserve.

† Cape Perpetua Lighthouse Reserve.

‡ Withdrawn from Federal Aid System.

§ Included in Route No. 9.

Grade Separation Funds: Federal grade separation funds are available for grade separations, grade crossing eliminations and grade crossing protection work on all classes of highways, public roads and streets, there being no limitation to any particular system or systems of roads or streets. Present regulations require that the funds be so utilized that each main line railroad in the state benefits in approximate proportion to the mileage of railroad operated.

Federal participation in the cost of grade crossing projects may be as high as 100 per cent.

Federal Lands Highway Funds: Federal lands highway funds can be used only for work on unappropriated or unre-served public lands, non-taxable Indian lands, or other federal reservations other than forest reservations. The locations in Oregon at which these funds can be used advantageously are in the public land areas in the far southeastern portion of the state, in the Warm Springs Indian Reservation, and the Klamath Indian Reservation. Use of the funds has been confined, so far, to the I. O. N. Highway in Malheur county, the Central Oregon Highway in Harney county, the Warm Springs Highway in Jefferson county, and the Klamath Falls-Lakeview Highway in Klamath county.

Federal lands highway funds may be applied on a 100 per cent basis on those parts of federal lands highway projects which are within the limits of public lands of the kinds mentioned in the preceding paragraph. None can be applied on portions of the projects which are on privately-owned lands or state-owned lands.

Access Road Funds: Access road funds are available to be used only on road and street improvements considered by the War Department and the War Production Board to be essential to the war effort and, then, only on projects on roads giving access to military establishments, war industries, mines and timber areas producing materials needed for war purposes.

Federal participation on access road projects may be in the entire amount of the cost, but State co-operation is expected where the projects are of benefit to state highway routes.

TABLE XVI
Federal Aid Funds and Forest Road Funds Apportioned
to Oregon

Period for Which Funds Are Apportioned	Federal Aid Funds	Forest Road Funds	Total
Total of prior apportionments*	\$43,182,391.80	\$17,853,088.89	\$61,035,480.69
<i>Act of June 16, 1936:</i>			
July 1, 1937, to June 30, 1938			
Federal aid funds	2,092,368.00	1,254,717.00	3,347,085.00
Reapportionment (1937)	8,685.00		8,685.00
Secondary or feeder road funds	418,474.00		418,474.00
Grade crossing elimination funds	588,377.00		588,377.00
Federal lands funds	168,367.00		168,367.00
July 1, 1938, to June 30, 1939			
Federal aid funds	2,048,413.00	1,254,044.00	3,302,457.00
Secondary or feeder road funds	409,683.00		409,683.00
Grade crossing elimination funds	565,844.00		565,844.00
Federal lands funds	167,394.00		167,394.00
<i>Act of June 8, 1938:</i>			
July 1, 1939, to June 30, 1940			
Federal aid funds	1,638,823.00	898,443.00	2,537,266.00
Secondary or feeder road funds	245,823.00		245,823.00
Reapportionment (1937)	892.00		892.00
Grade crossing elimination funds	224,953.00		224,953.00
Reapportionment (1937)	1,832.00		1,832.00
Federal lands funds	60,542.00		60,542.00
July 1, 1940, to June 30, 1941			
Federal aid funds	1,884,937.00	1,171,755.00	3,056,692.00
Reapportionment (1938)	6,361.00		6,361.00
Secondary or feeder road funds	245,861.00		245,861.00
Reapportionment (1938)	954.00		954.00
Grade crossing elimination funds	335,220.00		335,220.00
Reapportionment (1938)	840.00		840.00
Federal lands funds	129,201.00		129,201.00
<i>Act of September 5, 1940:</i>			
July 1, 1941, to June 30, 1942			
Federal aid funds	1,647,906.00	947,711.00	2,595,617.00
Secondary or feeder road funds	288,383.00		288,383.00
Grade crossing elimination funds	228,715.00		228,715.00
Federal lands funds	96,839.00		96,839.00
July 1, 1942, to June 30, 1943			
Federal aid funds	1,649,132.00	950,642.00	2,599,774.00
Secondary or feeder road funds	288,598.00		288,598.00
Grade crossing elimination funds	228,533.00		228,533.00
<i>Act of November 9, 1941:</i>			
Period of War Emergency			
Strategic network funds	412,283.00		412,283.00
Advance engineering surveys	164,913.00		164,913.00
Totals	\$59,431,537.80	\$24,330,400.89	\$83,761,938.69

* For the detail of yearly allotments prior to 1938, see former reports of the State Highway Commission.

Federal participation in the cost of projects financed with strategic highway network funds is limited to 81.02 per cent.

Flight Strip Funds: Flight strip funds are available only for the construction of temporary landing fields considered by the War Department to be essential to the war effort. Federal participation in the cost of flight strip projects is on a 100 per cent basis.

Advance Engineering Funds: Advance engineering funds are available only for surveys, designing and other preliminary engineering work for major highway and street improvement projects proposed for construction as a part of a post-war program. They are limited, also, to projects on the inter-regional highway system, which system, in Oregon, consists of U. S. Highway No. 99 and the portion of U. S. Highway No. 30 which is east of its junction with U. S. Highway No. 99.

Federal participation in the cost of advance engineering projects is limited to 62.05 per cent.

Forest Highway Work

Federal forest highway work, unlike federal aid highway work, is performed under the direct supervision of the federal Public Roads Administration. The State Highway Commission has a voice in the selection of projects and in the types of standards of construction, and sometimes has charge of the making of surveys, but does not in any other respect participate in the direction and performance of the work. The Public Roads Administration awards the construction contracts, engineers the work, pays the contractor and does all other things necessary to bring the work to satisfactory completion.

Federal allotments for forest highways have been made more or less regularly since 1916 and have been distributed among the states in proportion to their areas of national forest land. Oregon's share of these allotments has been \$24,330,401. Of this amount, \$18,311,764 has been expended on the state highway system. This expenditure of federal moneys has been supplemented by State co-operation in the amount of \$5,611,153, and county co-operation in the amount of \$2,752,161,

TABLE XVII
Oregon Forest Highway System

Forest Road No.	State No.	Name	Termini	Length in Miles
1	32	Three Rivers	Hebo-East Forest Boundary	13.9
2	39	Salmon River	Oregon Coast Highway-West Polk County Line	13.7
3	9	Oregon Coast	Neskowin-Siletz River	23.0
4	181	Siletz River	Oregon Coast Highway-Forest Boundary	6.0
5	9	Oregon Coast	Yaquina Bay-Umpqua River	68.7
6	27	Alsea	Walport-Benton County Line	28.4
7	34	Siuslaw	Oregon Coast Highway-Blachly	45.0
8	45	Umpqua	Reedsport-Scottsburg	15.6
9	9	Oregon Coast	Douglas County Line-Hauser	9.6
10	9	Oregon Coast	Port Orford-Gold Beach	31.4
11	25	Redwood	O'Brien Schoolhouse-State Line	5.4
12	25	Redwood	Summit Hayes Hill-Love Station	2.0
13	38	Oregon Caves	3 miles west of Forest Boundary to Caves	11.4
14	....	Applegate (county road)	Ruch-Watkins	17.0
15	1	Pacific	Canyonville-2¾ miles south of Forest Boundary	11.0
16	230	Tiller to Trail	Tiller to Trail	26.2
17	22	Crater Lake	Trail-Park Boundary	44.2
18	22	Crater Lake	Dalles-California Highway-Park Boundary	7.7
19	4	Dalles-California	Crescent-Old Fort Klamath	57.8
20	424	Sand Creek	Dalles-California Highway-Park Boundary	4.3
21	18	Willamette	Lowell to Dalles-California Highway	73.3
22	15	McKenzie	Blue River to Sisters	51.1
23	16	Santiam	1 mile east of Foster to Sisters	69.9
24	*	North Santiam	Niagara-Santiam Highway	43.2
25	26	Mount Hood	West Forest Boundary to Wapinitia Jct.	15.4
26	44	Wapinitia	Mt. Hood Highway to 1 mile north of Wapinitia	32.9
27	41	Ochoco	West Forest Boundary to North Forest Boundary	20.0
28	2	Columbia River	West Forest Boundary to East Forest Boundary	27.9
29	19	Fremont	West to East Forest Boundary	16.2
30	20	Klamath Falls-Lakeview	West to East Forest Boundary	29.8
31	19	Fremont	4 miles south of Valley Falls to 6 miles north of Lakeview	13.0
32	321	Heppner-Spray	Mouth of Chapin Creek to John Day Highway	26.3
33	28	Pendleton-John Day	2½ miles northwest of Albee to Range	30.7
34	28	Pendleton-John Day	Long Creek-South Forest Boundary	20.4
35	†	John Day-Burns	John Day-Burns	69.5
36	5	John Day	Prairie City-Unity	42.6
37	330	Weston-Elgin	McDougall's Camp to Summerville-Elgin Road	23.2
38	11	Flora-Enterprise	State Line to South Forest Boundary	30.3
39	350	Little Sheep Creek	West Forest Boundary to Imnaha	8.8
40	413	Baker-Cornucopia	Carson to Cornucopia	5.0
41	....	Loop-Dalles (county road)	Mt. Hood Highway to East Forest Boundary	15.0
42	53	Warm Springs	Wapinitia Highway Junction-Forest Boundary	7.0
43	†	Diamond Lake	Union Creek to Dalles-California Highway via Diamond Lake	38.9

TABLE XVII—Continued

Forest Road No. State No.	Name	Termini	Length in Miles
44	¶ Williams Creek	Williams Highway to Oregon Caves Highway	20.0
45	9 Oregon Coast	North Forest Boundary to South Forest Boundary between Beaver and Hebo	1.1
46	§ Cascade Lakes	North Boundary to Crater Lake Park to Bend	101.0
47	..... North Umpqua (county road)	Rock Creek to Cascade Lakes Highway	60.9
48	421 Klamath Lake-West Side	Forest Boundary east of Gardner Peak to Forest Boundary south of Odessa Ranger Station	20.0
49	26 Mount Hood	Wapinitia Junction-North Forest Boundary	21.5
50	..... Timberline	Mt. Hood Highway Junction to Timberline Lodge	6.0
Total mileage on Forest Highway System			1,382.3
Mileage on State System			1,176.1

* Includes 31.7 miles on Highway 162 and 11.5 miles on county road.

† Includes 67.0 miles on Highway 48 and 2.5 miles on Highway 7.

‡ State Secondary Highways 233 and 425.

§ Includes 7.2 miles on State Secondary Highway 261.

¶ Includes 17.1 miles on State Secondary Highways 232 and 372.



A FOREST HIGHWAY PROJECT ON THE PENDLETON-JOHN DAY
HIGHWAY SOUTH OF FOX IN GRANT COUNTY

bringing the total expenditure for forest highway projects on the state highway system to \$26,675,078. This expenditure has resulted in the completion of 857 miles of grading, 855 miles of rock surfacing, 179 miles of oiling and 129 miles of bituminous macadam.

The war effort of the past three years has forced temporary discontinuance of forest highway work, with the result that no part of the \$947,711 allotted to Oregon for the fiscal year 1942, or of the \$950,642 allotted for the fiscal year 1943, has been contracted. Work under the allotment for the fiscal year 1941 was contracted and underway before the commencement of war activities and was carried on through the construction season of 1942 and 1943.

The use of forest highway funds is limited to work on the Forest Highway System, which system has been arrived at by mutual agreement between the Public Roads Administration, the National Forest Service, and the State Highway Commission. It includes only roads which are within or near to National Forests. A listing of the roads in the system appears in accompanying Table XVII. Most, but not all, of the roads included are state highways.



HOGG ROCK-SUTTLE LAKE SECTION OF THE SANTIAM HIGHWAY IN
JEFFERSON COUNTY, IMPROVED BY FOREST HIGHWAY FUNDS

Financial co-operation in forest highway work by the State or by counties is not required but is sometimes given. In all cases, the cost of right of way across lands not owned by the Federal Government is borne by the State or, if the road is a county road, by the county.

Sections of highway constructed with forest highway funds are maintained by the federal government for two years. Responsibility for maintenance is then assumed by the State or the county, depending on whether the project is, or is not, on the state highway system.

Work Projects Administration (WPA) Projects

In 1935, by act of Congress, an agency was created which was known as the Works Projects Administration (WPA). The act placed at the disposal of this agency funds for relief projects for persons requiring public assistance, and were used in part in the construction of highways.

Local sub-divisions of Government were required to contribute funds on a cooperative basis, in some cases as low as 10 per cent, and in other cases as high as 75 per cent of the cost of the project. The State Highway Commission provided funds and sponsored a number of projects which were of benefit to the state highway system.

All projects under this program were discontinued shortly after the outbreak of the war when the need for relief employment ended. Federal expenditures on the work on the state highway system during the several years that operations were in progress, are reported to have been in excess of \$8,000,000. The more important of the projects undertaken on state highways were grading and surfacing projects on the Wilson River Highway, the Wolf Creek Highway and the Camp Clatsop-Fort Stevens-DeLaura Beach Road connecting Fort Stevens with Camp Clatsop.

County and City Participation in Revenues from Motor Vehicle Imposts

Revenues from motor vehicle impostes are used first of all to pay refunds allowable under the provisions of the laws and

to defray expenses incurred by the Secretary of State and the Public Utilities Commissioner in making collections of the revenues and in performing certain administrative and enforcement duties with which they are charged by the provisions of the applicable laws.

The balances remaining after payment of the refunds and expenses mentioned, are allotted as follows:

To Counties	15.7%
To Cities	5.0%
To State Police Department—A monthly allowance fixed by the State Legislature, which amount at present approximates	2.5%
To Highway Commission—The balance remaining after payment of above listed allotments, which balance approximates	76.8%

County Participation in Income: County participation in state highway income is in an amount equal to 15.7 per cent of that income, but not less than \$2,000,000 in any one year. This share of the income is distributed among the several counties in proportion to the number of motor vehicles of all kinds registered from the counties during the preceding year.

Of the counties' share of the income for a given year, \$800,000 is distributed to the counties on July 15th of that year, \$1,200,000 is distributed on December 15th of that year and the balance is distributed not later than February 1st of the following year.

Funds received by the counties from this source are required by law to be used for the following purposes, preferentially in the order in which they are listed.

1. In payment of interest and retirement of bonds, except in cases where other provision has been made for such payment.
2. In payment of the cost of preparing the roadbed, bridges, etc., for the construction of state highways, as provided by law, except in cases where other provision has been made for such cost.
3. In any other manner for general road improvement, at the discretion of the county court.

The counties' share of the 1943 income was \$2,311,569.

City Participation in Income: City participation in state highway income is in an amount equal to five (5) per cent of that income, with the limiting provision that the cities are not to participate in the income of any year in which such participation will reduce, to below \$11,000,000, the balance remaining to be shared between the counties, the State Highway Commission and the State Police.

The cities' share of income is distributed among the cities in proportion to population, with the provision that only two-thirds of a city's population is to enter into the calculation, where the population of the city is in excess of 100,000. Payment of the cities' share of the income of a given year is made on February 1st of the year following the year during which the income accrued.

Funds received by the cities from this source are required by law to be used for constructing, reconstructing, improving, repairing or maintaining city streets which have not been designated as connecting links between state highways. The law provides, also, that cities of populations less than 1,000 may not expend funds received from this source unless, and until, plans for the expenditure have been submitted to and approved by the State Highway Commission.

Another provision of the law requires each city to set aside in a "state tax street fund" the money which it receives and requires that moneys permitted to remain in that fund, unexpended, revert to the State for reallocation to other cities, unless the city has previously perfected a plan for the use of the moneys and the program has received the approval of the State Highway Engineer.

The first distribution of funds to the cities was made as of February 1, 1944, and the total thereof was \$736,168.35. This distribution amounted to \$456,542 (\$1.37 per capita) for cities having populations less than 100,000 and \$279,626 (\$0.91 per capita) for the City of Portland.



KINGS VALLEY SECONDARY HIGHWAY NEAR PEDEE, RECONSTRUCTED
ON NEW LOCATION OUTSIDE BOUNDARIES OF CAMP ADAIR
IN POLK COUNTY

REPORT OF CONSTRUCTION DEPARTMENT

H. G. SMITH, *Construction Engineer*

During the past biennium the construction program has consisted chiefly of those projects needed in the furtherance of the war effort and the production of materials necessary to keep the highways in reasonable repair. With only a few exceptions, construction projects have consisted of projects of military importance on the Strategic Network and projects giving access to military areas, timber reserves and mining areas. The major part of the work of the Construction Department has been the making of surveys for postwar projects.

Access Road Projects

Two projects in the vicinity of Camp White (north of Medford), which were referred to in the previous biennial report, have been completed during this period. They are the Tolo Overcrossing-Camp White Section and the Evans Creek-Sams Valley unit. The first gives direct access from the camp to areas north and west, and the second replaces the previous route to Evans Valley which had been blocked by an artillery range. These two projects involved an expenditure of approximately \$192,000.

In the vicinity of Camp Adair (between Monmouth and Corvallis) several changes in highways were necessitated by the construction of the camp, and these changes, on the Monmouth-Pedee Section of the Kings Valley and Dallas-Kings Valley secondary highways, are nearing completion at an estimated cost of \$450,000.

Numerous access roads were constructed to Army and Navy airports, target ranges and hospitals. Among them are access roads to the following facilities: North Bend Airport, Madras-Redmond Airport Target Range, Klamath Falls Airport, Lakeview Airport, Astoria Airport, and Astoria Naval Hospital. All but the two projects near Astoria have been completed during the biennium, and these two are scheduled for completion this fall. Access projects of this nature, in progress during the period covered by this report, will cost approximately \$1,250,000.

Roads constructed or improved to give access to mines, distribution depots and timber areas include roads to the Seven Devils chrome mine in Coos County, the South Mountain zinc mine east of Jordan Valley, an oil depot on the Columbia River near Umatilla, the Siletz timber area in Lincoln County, and the South Santiam timber area in Linn County. Access roads of this class, in progress during the biennium, involved an expenditure of approximately \$530,000.

Flight Strip Projects

Contracts were let and construction completed on four flight strips (emergency airplane landing fields). These strips were constructed under the provisions of the Defense Highway Act of 1941, at a cost of approximately \$1,200,000, the entire cost being borne by the federal government. The strips are of sufficient size to accommodate the larger bombers, and, with one exception, are located in areas distant from existing airfields. On several occasions, the presence of the strips has enabled pilots to avoid landings on unimproved areas with attendant damage and possible loss of life.

Federal Aid and Strategic Network Projects

Among the more important of the projects undertaken during the biennium is the I. O. N. project in the extreme southeastern part of the State. This project entails an expenditure of approximately \$1,000,000. It is on the Federal Strategic Highway Network and opens to all-year travel a route between the Snake River Valley and California points, which is 108 miles shorter than any other usable all-year road. The route is important in connection with the movement of gasoline for use at interior airbases and in the movement of fruits, vegetables and livestock from Idaho to the California markets and ports.

Equal in importance to the I. O. N. project is the traffic separation and interchange project at the intersection of U. S. Highways 99E and 99W at the south end of the Columbia River bridge north of Portland. This project, built at a cost of \$375,000, has eliminated completely the serious traffic con-

gestion which developed when the large shipyards in Vancouver went into operation.

Another Federal Strategic Highway Network project, now under way, is the Halsey-Harrisburg project on the Pacific Highway East in Linn County. This project estimated to cost \$480,000, will replace an old narrow and badly-broken pavement with a modern 24-foot pavement, and will eliminate two objectionable curves immediately south of the town of Halsey. The plan contemplates future widening to four-lane width.

A Regular Federal Aid project, contracted and completed during the biennium, is the Judkins Point Section of the Pacific Highway, lying between Eugene and West Springfield. This project, involving an expenditure of \$495,000, eliminates a very dangerous railroad crossing in the City of Eugene and provides four travel lanes where only two existed before. Prior to the making of this improvement, the section involved has been a serious bottleneck in the flow of traffic on the important Pacific Highway (U. S. 99).

Still another important Federal Aid project is the Grave Creek-Jumpoff Joe Creek project on the Pacific Highway over Sexton Mountain in Josephine County. This project embraced three contracts, two for the grading and one for the surfacing and oiling. Grading was started in December, 1940, and completed in September, 1942, at a cost of \$587,000. Surfacing and oiling was started in June, 1942, and completed in November, 1943, at a cost of \$184,000. Opening of the new section resulted in a saving of 1.16 miles in distance and the elimination of many sharp curves and switchbacks. At the summit of Sexton Mountain, the highway was widened from two-lane width to four-lane width to provide ample room for safe passing without the expensive and otherwise objectionable deepening of the summit cut, which would have been necessary to provide the standard safe passing sight distance required for two-lane pavement. The resulting shorter vertical curve at the summit is sufficient, however, to provide requisite safe stopping distance. Use of the four lanes has an added advantage, also, in that it provides room for slow-moving, heavily-



CONCRETE VIADUCT OVER THE UMATILLA RIVER AND THE UNION
PACIFIC TRACKS ON OLD OREGON TRAIL NEAR STANFIELD,
UMATILLA COUNTY



FOUR-LANE DIVIDED HIGHWAY ON THE PACIFIC HIGHWAY
AT JUDKINS POINT, NEAR EUGENE, SHOWING WIDE
MERIDIAN STRIP AND SIDEWALK

loaded trucks to travel in the outside lanes, while the faster moving passenger car traffic flows freely in the inside lanes.

Postwar Planning

Although a large percentage of the construction department's engineering personnel below the rank of transitman has left the employ of the Department, either for service in the armed forces or to engage in other war activities, it has been possible, through the employment of high school students and women, to maintain an engineering staff sufficient to carry on a considerable amount of postwar planning work. The planning program is already sufficiently advanced to insure the Department's being able to contract postwar projects as rapidly as funds for the construction can be provided.

Construction Difficulties

At the beginning of the biennium, priority control, lack of equipment and labor shortage, plus the gravitation of contractors toward war projects, operated to greatly increase the cost of construction work. At this time, however, priorities have been eased to a great extent, more materials are being released for construction, military construction requirements have decreased, and many contractors are again returning to bid on highway contracts. As a result, construction costs are decreasing, although they are still far above a peacetime level.



STRUCTURE CARRYING UNION PACIFIC TRACKS OVER THE ORDNANCE
DEPOT SECONDARY HIGHWAY IN UMATILLA COUNTY



CONCRETE BRIDGE, LENGTH 80 FEET, OVER ROCK CREEK AT THE
JUNCTION OF THE OCHOCO AND JOHN DAY HIGHWAYS

REPORT OF BRIDGE DEPARTMENT

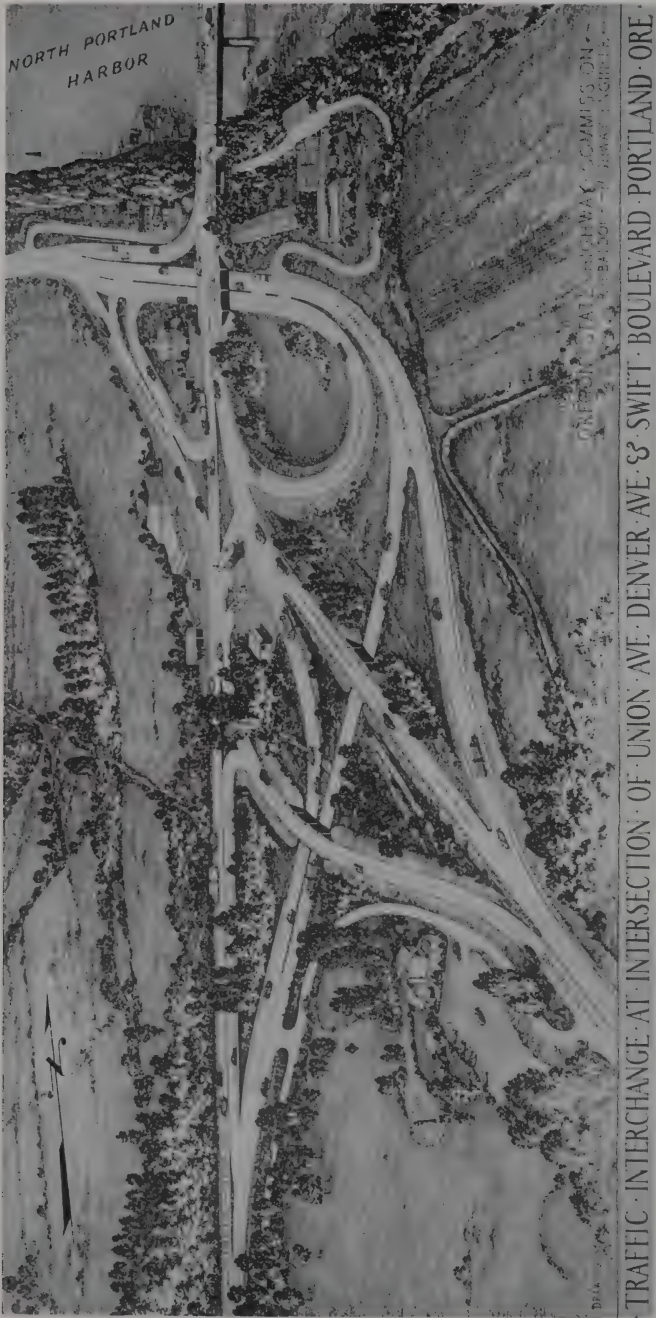
G. S. PAXSON, *Bridge Engineer*

Construction work handled by the Bridge Department during the past biennium has been greatly curtailed by the acute shortage of both material and manpower which has existed under wartime conditions. Only such new projects as have been considered essential to the war effort, and which have been approved as such by the governing federal agencies, have been undertaken. Existing bridges, which have deteriorated to such an extent that ordinary maintenance could not keep them in service, have been replaced in kind or, in some cases, repaired by contract.

During the past biennium, sixteen contracts involving structures have been awarded. The cost of these projects is estimated at \$340,000. In addition to these new projects, twenty-nine projects, which were placed under contract during the preceding biennium, were completed at a cost of \$800,000. The most important of the projects handled during this biennium are as follows:

Coast Fork of the Willamette River Bridge: This bridge consists of a 180-foot timber truss and pile trestle approaches. It is on the realigned section of the Willamette Highway between Goshen and Pleasant Hill in Lane County. It replaces an obsolete structure which had become dangerous to traffic because of its narrow width and decayed condition. The contract for the work was awarded to Tom Lillebo of Reedsport on July 1, 1942. Work was completed, except for the removal of the old bridge, on September 3, 1943. The cost of the work was \$53,774.

Denver Avenue Junction Traffic Interchange: There are four separate structures in this project. Structure No. 1 carries the Pacific Highway over the two roadways which take traffic from Denver Avenue and Union Avenue to Swift Boulevard and the traffic from Swift Boulevard to Vancouver. Structure No. 2 carries the westbound lanes of Union Avenue over the roadway which takes traffic from Denver Avenue to Swift



ARTISTS' DRAWING OF TRAFFIC INTERCHANGE AT THE INTERSECTION OF UNION AVENUE AND DENVER AVENUE ON THE PACIFIC HIGHWAY NORTH OF PORTLAND. COMPLETED IN MARCH, 1944.

Boulevard. Structure No. 3 carries the eastbound lanes of Union Avenue over the two roadways which take traffic from Denver Avenue to Vancouver and to Swift Boulevard. Structure No. 4 takes southbound traffic from Vancouver to Swift Boulevard. Structures No. 1, No. 2, and No. 4 are reinforced concrete viaducts. Structure No. 3 is a temporary timber pile trestle. This type of construction was adopted to expedite completion of the project as Structure No. 3 was used as a detour route during the construction of other parts of the project.

The contract for the work was awarded to Mr. Henry L. Horn of Caldwell, Idaho, on April 14, 1943. The work was completed on March 23, 1944, at a cost of \$94,250 for the structures.

Access Road Projects

The development of war industries in the Portland area made necessary the construction of new access roads and the improvement of existing roads leading to these industries. Included in these projects were several structures.

As a part of the access road improvement leading to the Swan Island Shipyard, an overcrossing of the Union Pacific Railroad was built on Going Street in Portland. This structure consists of two timber trusses with timber trestle approaches. It carries outbound traffic from the shipyard. It is parallel to the old overcrossing which now carries inbound traffic only. The contract for the work was awarded to the Tower Sales and Erecting Co. of Portland on June 25, 1942; work was completed December 17, 1942, at a cost of \$23,080.

The North Burgard Street Access Road project in Portland included the widening of the overcrossing of the Union Pacific Railroad near the Oregon Shipyard. The work consisted in the removal of the south handrail and curb of the existing structure and the construction of a timber trestle to accommodate the four-lane highway. The contract for the work was awarded to Mr. O. N. Pierce of Portland on June 4, 1942. The work was completed December 16, 1942, at a cost of \$10,890.

The construction of the access road to the housing project at Vanport included a structure carrying Denver Avenue over two of the connections to the project. This structure was a timber trestle with a four-lane roadway. The design was made by the Bridge Department. The construction work was handled by the Federal Housing Authority.

Several access road projects included parts of the highway system. The rebuilding of the Pacific Highway West, between Monmouth and Corvallis, included the widening of six existing bridges, the construction of a new undercrossing of the Valley and Siletz Railroad, and the construction of new bridges over the Luckiamute River, the Luckiamute River Overflow, and Ash Creek. Five of the existing bridges were widened with concrete using salvaged railroad rails for reinforcement. The undercrossing of the Valley and Siletz Railroad is a treated timber structure except for the spans over the highway. Untreated timber was used in these spans as they will be replaced by a steel girder giving additional clearance when materials are available. Untreated timber was used in the new bridges because of the shortage of structural and reinforcing steel.

Other access road projects included the replacement of the section of the Kings Valley Secondary Highway through Camp Adair and the reconstruction of the section of the Crater Lake Highway from Medford to Camp White. Both of these projects included minor drainage structures.

Strategic Network Projects

The immediate improvement of certain sections of the state highway system has been considered as essential to the war effort. The widening of the Halsey-Harrisburg Section of the Pacific Highway East includes the replacement of four obsolete bridges. The new structures are treated pile trestles with reinforced concrete decks and rails. The contract for the structures was awarded to the Frank Watt Construction Company of Portland on June 14, 1944, at an estimated cost of \$59,190. It is expected that work will be completed December 31, 1944.

The construction of the section of the I. O. N. Highway from the Molloy Ranch to Hooker Creek includes a bridge over Cow Creek. The structure is a reinforced concrete viaduct. The contract for the work was awarded to the Morrison-Knudsen Company of Boise, Idaho, on August 27, 1943. Work on the project is expected to be completed by October 31, 1944. The estimated cost of the structure is \$18,850.

Postwar Planning

It is anticipated that a large volume of highway construction will be undertaken immediately after the conclusion of the war. The Bridge Department is preparing plans and specifications for a large number of projects so that work may get under way without undue delay. Plans are complete for 42 structures and work is proceeding on other structures. The estimated cost of the structures for which plans are complete is \$2,800,000. In addition to these structures plans are complete for four maintenance buildings and several street lighting projects.

The Bridge Department furnished six skilled structural designers and five other construction and office employees to the armed forces. It has been impossible to replace these losses because of the great demand for such services by war production industries. The preparation of plans for postwar construction is going ahead, however, as rapidly as the limited personnel permits.



ROTARY SNOW PLOW OPERATING ON THE WILAMETTE HIGHWAY
NEAR THE SUMMIT OF THE CASCADES.



ROADWAY CLEARED OF SNOW ON THE WILLAMETTE HIGHWAY
EAST OF OAKRIDGE

REPORT OF MAINTENANCE DEPARTMENT

E. A. COLLIER, *Maintenance Engineer*

The maintenance of essential highway facilities has been performed the past two years in a manner to permit the free flow of traffic with safety. Wartime shortages of men, tires, gasoline, tank cars, asphalt, lumber, steel, new equipment, and repair parts, have been met and overcome as far as possible. These difficulties have prevented the full performance of some desirable work, such as snow removal on recreational roads, the replacing and painting of guard fences, the mowing of shoulders, and the cutting of brush. Nearly all betterment work and building construction has been deferred.

The number of maintenance employees in September, 1944, was 1,355, which is 30 per cent below the number in September, 1941. Many have joined the armed services; many others have gone to higher paid jobs in war industries. Women have acceptedly filled some of the gaps, acting as flagmen, truck drivers, and timekeepers. All crews, except paving and oiling crews have worked on a 48-hour work-week basis. Paving and oiling crews were worked 54 hours per week in order to obtain maximum capacity of plant and to make it possible to keep the crews fully manned. Some wage rate increases were granted during the biennium as an off-set to increased living costs.

There has been an increase in heavy truck-hauling of logs and freight of all kinds, both in numbers of vehicles and in gross loads hauled. Many trucks are on a 24-hour schedule, and more than 1,100 special permits, authorizing loads in excess of legal limits, have been issued each year to expedite the movement of war materials.

In the vicinity of military camps and airfields, and in the 1943 Eastern Oregon maneuver area, the type and concentration of traffic caused serious damage to highway surfaces. To apply on the cost of the repair of this damage, the State is claiming reimbursement from the Federal Government in the amount of \$175,000. The provisions of certain federal laws authorize the submission and payment of claims of this nature.

The increased heavy hauling on the highways has prevented any curtailment in pavement patching and re-oiling operations. In fact, the pavement plant patching tonnage required during 1944 is the greatest ever required. Inspections indicate the general condition of road surfaces and bridges, at the end of 1944, to be good.

A heavy flood in the Willamette Valley, early in 1943, caused considerable damage to highways and bridges, and resulted in the death of two employees by drowning. The State radio system proved particularly useful during this emergency. The Army and Coast Guard gave very effective assistance.

There has been no material increase, during the past two years, in mileage of highways maintained. The mileage maintained in 1943 was 7,140.

Organization

Work performed on the highways is of two classes; special maintenance and general maintenance. Special maintenance is the maintenance performed by contract, such as production of crushed rock, resurfacing jobs, and painting of major bridges. General maintenance is the routine and emergency repair and replacement work and traffic service work carried on by the Department's own maintenance forces.

The general maintenance work is performed, in the main, by section crews, 129 in number, working under the supervision of 16 District Maintenance Superintendents. These crews carry on their work from strategically located headquarters, making routine repairs, patrolling their sections during stormy weather, plowing snow, sanding slippery pavements, and removing slides, fallen rocks and trees. They are alert at all times to give prompt attention to the needs of the roads and to the safeguarding of traffic. They are the representatives of the Highway Department most often contacted by residents and travelers.

Paving and oiling crews, bridge crews, and other extra gang crews are organized independently of the section crews to perform their particular types of work. During the existing

shortage of labor, it was frequently necessary to use section crew labor in keeping the extra crews fully manned. The Maintenance Superintendents organize and supervise the crews and equipment, order materials and supplies, and, in general, direct all operations in their districts.

Maintenance of Pavements and Bituminous Surfacing

Paving crews, operating nine portable paving plants, placed a total of 84,826 tons in 1943 at an average cost of \$8.01 per ton. While the records for 1944 are not complete at this date, the output is estimated at 92,000 tons, at an average cost of \$8.07 per ton. This type of patching with hot asphaltic concrete has proved most effective on all types of surfaces, both for the



RE-OILED SECTION OF THE WALLOWA LAKE HIGHWAY
NORTH OF JOSEPH, WALLOWA COUNTY

repair of breaks and for the restoration of a smooth riding surface. Conditions obtaining this year have prevented the State doing for the cities much of the city street repair work that has been requested.

Three new paving plants were purchased during the bien-nium. One was delivered in the summer of 1943, and two were delivered late in the fall of 1944. In these plants, the aggregate is heated in a special heating drum and the mixing

is done in a pug type mixer with no direct flame on the asphalt. Improved quality and increased output has resulted. Nine tractor loaders to handle the aggregates have been purchased, and these, with loading skips and hoppers, have taken the place of about forty-five wheelbarrow men, and permitted an increase in production in spite of labor shortage.

Five oil crews applied 2,991,000 gallons of road oil in 1943, which was a slight reduction from 1942. In 1944, these crews placed 3,150,000 gallons. Four additional storage sumps for road oil were constructed during 1943, with a total capacity of 400,000 gallons. These sumps, together with the four 50,000-gallon sumps built previously, were a big help in securing steady supplies of road oil to the oiling crews and materially helped relieve the tank car shortage which was very acute in September of 1943 and 1944.

Unit Oiling Costs for 1943

Work		Cost		Material Cost	
Specification	Miles	Per Mile	Per Sq. Yd.	Rock Cu. Yd.	Oil Per Ton F. O. B. Car
0-31	51	\$617	\$.052	\$1.69	\$16.70
0-30 (a)	422	997	.085	1.94	18.04
0-30 (b)	50	1605	.137	1.44	16.95
0-9	16	2260	.195	1.61	17.08
0-11	9	2946	.259	2.21	18.11

Width varied from 14.4 to 21.6 feet but per mile cost has been adjusted to width of 20 feet. 0.30 (b) is constructed with an extra lift on the outside quarters to reduce excessive crown.

Cost Percentages: For labor, 26%; Asphalt, 29%; Rock, 33%; Equipment and Supplies, 12%.

Bridge Maintenance

The maintenance and repair of some 2,400 bridges on the State Highway System was continued during the biennium by 14 crews severely depleted in men and further handicapped by War Production Board priority restrictions.

The critical shortage of lumber, the demands of the military services, and the shortage of skilled workmen have limited the operations of the bridge crews to the most essential phases of maintenance and considerable "cobbling up" of many timber bridges now nearing the end of their service life. These same

handicaps made necessary the performance by contract of four or five of the larger bridge painting and reconditioning jobs.

Difficulty in securing necessary requirements of lumber was greater in 1943 than 1942, as shown in the following comparison:

	Quantities Needed	Quantities Obtained
1942		
Douglas Fir F. B. M.	2,909,323	2,337,844
Cedar F. B. M.	450,000	361,913
1943		
Douglas Fir F. B. M.	2,014,000	1,296,388
Cedar F. B. M.	360,000	135,703

Maintenance of Buildings

The Department owns and operates five division headquarters buildings, twelve district headquarters buildings, fifty-five section headquarters buildings, four equipment repair shops, and fifty truck scales and scale houses. The maintenance and upkeep of these facilities is performed by State forces. Two of the regular bridge crews are especially equipped and trained for this class of work.

The Department also rents forty-nine section maintenance buildings, the majority of which are inadequate. During the summer of 1944, a comprehensive study was made of the buildings and plants owned and of future building requirements. Studies were also made of similar facilities in Washington and California. As a result, plans are being prepared for several needed buildings with the expectation that their construction can be undertaken as a part of the postwar program.

One bridge crew specializes in the installation, service and repair of the fifty pit-type 30-ton truck scale installations. During the biennium, War Production Board priority regulation prevented the purchase and installation of four additional truck scales which were planned and budgeted for that period.

Weight Control of Logging Trucks

The weight control division of the Maintenance Department was inaugurated in May, 1941. There are employed in it a

total of 22 men. Its operation has resulted in a more serious endeavor on the parts of log haulers and the lumbering interests to conform with legal load limitations.



CONCRETE BRIDGE, LENGTH 320 FEET, OVER THE JOHN DAY RIVER AT GOOSE ROCK ON THE JOHN DAY HIGHWAY NORTH OF DAYVILLE, GRANT COUNTY

The following is a brief summary of the operations of the weight control division during the years 1942 and 1943.

	1942		1943	
	Total Loads	Per Cent of Total	Total Loads	Per Cent of Total
Total loads weighed	129,800	100	137,159	100
Total loads under 54,000 pounds	77,400	59.6	69,192	50.5
Total loads 54,000-61,000 pounds	41,900	32.3	58,742	42.8
Total loads over 61,000 pounds	10,500	8.1	9,225	6.7
Total violations	2,414	1.86	2,998	2.19
Fines resulting		\$13,135		\$21,119

Slides

At several locations over the State, slides have continued to involve sections of the highway roadbed. These movements are usually caused by water seeping on an impervious sloping strata which reduces the coefficient of friction to the point of instability. A slide on the Old Oregon Trail near Weatherby caused settlement of the grade and threatened a blocking of

the Burnt River. After examination by geologists and slide experts from the Union Pacific Railroad and the Highway Department, it was planned to remove a large part of the moving mass above the highway. About 70,800 cu. yds. were excavated and hauled away under a contract at a cost of \$26,900, shared equally by State and railroad. A flow of water was uncovered and drained and the slide has shown no movement during the past year.

In the Siskiyou, heavy grading in unstable material was an unavoidable part of the highway construction. Nine large slides and many smaller ones have been active in the last two years. Deep trenches have cured some, and drain tunnels have improved conditions at others, but there is still a very definite slide problem in that area. Cost for slides in 1943 and 1944 on this section has been \$69,600.

On the South Santiam Highway, large slides have blocked the road several times and are still a major problem. Steep slopes, seeping water and unstable soils cause this trouble. Sheep Creek bridge is within one major movement and it was necessary to bulldoze and sluice away a part of the slide which was crushing the east end of the bridge. The road and river were blocked for a time by a slide near Upper Soda. Another slide above Sheep Creek carried out the entire roadbed for a length of 200 feet and to a depth of 50 feet. A detour at grade and a drain tunnel have been built at this slide. At Hogg Rock, snow slides have occurred, the condition being particularly bad in the Spring of 1943. One car was caught and buried but no lives were lost. The road was closed for three weeks.

Heavy construction on the Wolf Creek Highway has resulted in a number of slides, most of which have now been cured by deep trenches or drain tunnels. At Brighton, a movement started last winter involving the Coast Highway and the Southern Pacific Railroad. The toe of the slide is under water in the bay. A drain tunnel is being dug by a State crew at an estimated cost of \$23,000, half of which is to be paid for by the railroad.

Signs, Signals and Traffic Lines

The work of installing and maintaining signs and signals and the painting of traffic lines is performed by state crews

under the supervision of an assistant maintenance engineer. The manpower shortage has forced a reduction in traffic line crews from six crews in 1941 to three crews in 1943 and 1944. As the familiar yellow stripe down the center is important from the standpoint of safety, it is hoped soon to have enough force to again stripe all the oiled and paved highways.

The State had a fairly large stock of signs, reflector buttons and lacquer at the beginning of the war, so has been able to pull through the period of conservation and shortage with few additional purchases. Damaged metal signs have been cleaned, straightened, repainted and restored to use.

The electrical crews install and maintain traffic signals and lighting facilities for illumination of tunnels, bridges, ferries and highway junctions.

State Maintenance on City Streets

During 1942 and 1943, the cities were assisted with their maintenance on heavy truck routes not on State highways. Highway crews, at State expense, patched pavements, reoiled sections, placed gravel and repaired bridges. The cost for 1942 was \$144,416, and for 1943 was \$141,962. Some work uncompleted in 1943 was completed in 1944 at a cost of about \$20,000. The Legislature in 1943 provided for an allocation to cities of a part of the revenues from the gasoline tax and other motor vehicle imposts, which action made further continuance of the Commission's street maintenance program unnecessary.

Equipment

The Maintenance Department furnishes and repairs all Highway equipment. Rent is charged on each piece to cover depreciation, repair and maintenance. A material reduction in rental rates was made in 1942. Repairs are made at four shops located at Salem, La Grande, Klamath Falls, and Coquille. Each shop is in charge of a Superintendent under the direction of the Master Mechanic at Salem. Supplies and parts are purchased, stored and dispensed as needed by the storerooms operated in connection with the four shops.

In normal times the Department requires about 60 new dump trucks a year and other equipment in proportion, but

restrictions on sales have required the shops to prolong the life of equipment by extensive overhauling and repairs. Parts and tires have been difficult to secure.

The Department has several pieces of heavy equipment (power shovels, rollers, tractors, et cetera) which were acquired for use in connection with W. P. A. projects on the Wolf Creek and Wilson River Highways. As war conditions prevented the Department making use of this equipment on work of its own, the equipment was rented to contractors for use in connection with Army and Navy projects of various kinds. The rental return to the State on this equipment, during the period from June, 1942, to October, 1944, was \$94,376.

Accumulations of worn-out and obsolete equipment, scrap metal, rubber, paper, et cetera, are disposed of, at intervals, by sale on a competitive bid basis. Receipts from such sale, during the period from January 1, 1944, to October 30, 1944, totalled \$29,326.

Cost Statements

Itemized statements showing the "per mile" cost of maintenance for both the primary and the secondary highway systems during each of the calendar years 1942 and 1943, and showing also the total mileage in each system maintained, appear in accompanying tables.

TABLE XVIII

Costs of Maintaining Primary State Highways

Calendar Year 1942

Kind of Work	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Main- tained	Cost per Mile
<i>Surface</i>					
Concrete pavement	\$ 53,449.29	\$ 7,455.24	\$ 60,904.53	336	\$159
Asphaltic pavement					
(a) Patch and re-treat	129,703.41	.....	129,703.41	533	243
(b) Material stockpiled .....	.....	45,043.56	45,043.56	533	.....
Bituminous macadam					
(a) Patch and re-treat	348,865.06	.....	348,865.06	1,208	289
(b) Material stockpiled .....	.....	149,881.85	149,881.85	1,208	.....
Oiled macadam					
(a) Patch and re-treat	861,154.16	.....	861,154.16	2,313	372
(b) Material stockpiled .....	.....	175,189.99	175,189.99	2,313	.....
Untreated macadam and graded					
(a) Blade and gravel	58,398.75	.....	58,398.75	391	149
Base and subbase repairs	3,918.65	.....	3,918.65	.....	.....
<i>Shoulders</i>					
Patching and re-treating	76,999.92	.....	76,999.92	.....	.....
Blading and sodding	46,340.02	.....	46,340.02	.....	.....
Sidewalks and footpaths	1,557.47	.....	1,557.47	.....	.....
<i>Drainage</i>					
Ditches	191,317.10	.....	191,317.10	.....	.....
Drains, drainage tunnels, flumes	6,317.55	.....	6,317.55	.....	.....
Culvert cleaning	12,011.44	.....	12,011.44	.....	.....
<i>Structures</i>					
Box culverts and bridges, 20 feet and under in length	12,260.24	.....	12,260.24	.....	.....
Bridges longer than 20 feet	141,931.76	.....	141,931.76	.....	.....
Guard fence and sight posts	25,004.96	.....	25,004.96	.....	.....
Pipe culverts	7,233.15	.....	7,233.15	.....	.....
Roadway tunnels	3,896.25	.....	3,896.25	.....	.....
Parapets and retaining walls ..	4,229.59	.....	4,229.59	.....	.....
<i>Roadside</i>					
Removing weeds and brush	120,387.54	.....	120,387.54	.....	.....
Removal of debris	48,985.58	.....	48,985.58	.....	.....
Highway beautification	19,089.63	.....	19,089.63	.....	.....
Slide removal	105,038.87	.....	105,038.87	.....	.....
Fills, replace and widen	76,894.37	.....	76,894.37	.....	.....
Right of way fence	406.26	.....	406.26	.....	.....
Seeding and planting slopes	176.32	.....	176.32	.....	.....
Road approaches	14,356.29	.....	14,356.29	.....	.....
<i>Traffic Service</i>					
Traffic signals	7,315.21	.....	7,315.21	.....	.....
Signs and highway markers	54,494.87	.....	54,494.87	.....	.....
Traffic lines	82,382.21	.....	82,382.21	.....	.....
Snow removal	196,255.61	.....	196,255.61	.....	.....
Mile posts	243.04	.....	243.04	.....	.....
Sanding icy pavements	65,808.08	.....	65,808.08	.....	.....
Flagging, towing, etc.	5,497.70	.....	5,497.70	.....	.....
Highway illumination	6,181.70	.....	6,181.70	.....	.....
Road magnet operation	4,571.42	.....	4,571.42	.....	.....
Traffic islands	490.93	.....	490.93	.....	.....
General Supervision	86,661.41	.....	86,661.41	.....	.....
Totals	\$2,879,825.81	\$ 377,570.64	\$3,257,396.45	4,781	\$681

TABLE XIX

Costs of Maintaining Primary State Highways

Calendar Year 1943

Kind of Work	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Main- tained	Cost per Mile
<i>Surface</i>					
Concrete pavement repairs	\$ 84,406.92	\$	\$ 84,406.92	338	\$250.
(a) Material stockpiled		115.73	115.73	338	
Asphaltic pavement repairs	178,686.48		178,686.48	524	341.
(a) Material stockpiled		7,592.55	7,592.55	524	14
Bituminous macadam repairs	323,749.68		323,749.68	1,218	266
(a) Material stockpiled		217,167.07	217,167.07	1,218	178
Oiled macadam repairs	884,157.87		884,157.87	2,329	380
(a) Material stockpiled		500,679.86	500,679.86	2,329	380
Untreated and graded, repairs	81,977.38		81,977.38	381	215
(a) Material stockpiled		18,352.50	18,352.50	381	48
Base and subbase repairs	7,699.92		7,699.92	2,791	
<i>Shoulders</i>					
Blading and re-treating	127,761.02		127,761.02		
Sidewalks, islands, curbs	1,583.80		1,583.80		
<i>Drainage</i>					
Ditches	197,508.95		197,508.95		
Drainage tunnels	19,293.35		19,293.35		
Pipe culverts, siphons, flumes ..	28,883.03		28,883.03		
<i>Structures</i>					
Box culverts and bridges 20 feet and under in length	20,830.17		20,830.17		
Bridges longer than 20 feet	116,382.61	11,675.09	128,057.70		
Guard fence and sight posts	10,850.43		10,850.43		
Roadway tunnels	2,120.18		2,120.18		
Retaining walls, dikes, etc.	381.92		381.92		
<i>Roadbed and Right of Way</i>					
Removing weeds, brush, etc.	132,023.12		132,023.12		
Landscaping	9,983.43		9,983.43		
Slides, roadbed and slopes	233,477.36		233,477.36		
R. of W. fence, mile posts	1,022.14		1,022.14		
Road approaches	11,259.90		11,259.90		
<i>Traffic Service</i>					
Traffic signals	7,007.36		7,007.36		
Signs and highway markers	47,520.25		47,520.25		
Traffic lines	87,279.11		87,279.11		
Snow removal	201,687.00		201,687.00		
Sanding slippery pavements	31,682.91		31,682.91		
High water: Flag, patrol, tow	7,137.54		7,137.54		
Highway illumination	5,432.64		5,432.64		
Road magnet operation	5,112.03		5,112.03		
Sub-total	\$2,866,898.50	\$ 755,582.80	\$3,622,481.30		
Maintenance superintendence ..	101,350.00		101,350.00		
Total	\$2,968,248.50	\$ 755,582.80	\$3,723,831.30	4,790	\$777

TABLE XX

Costs of Maintaining Secondary State Highways

Calendar Year 1942					
Kind of Work	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Main- tained	Cost per Mile
<i>Surface</i>					
Concrete pavement	\$ 7,198.65	\$	\$ 7,198.65	45	\$160
Asphaltic pavement					
(a) Patch and re-treat	15,966.13	.....	15,966.13	140	144
Bituminous macadam					
(a) Patch and re-treat	21,963.25	.....	21,963.25	51	431
(b) Material stockpiled .....	.....	1,159.11	1,159.11	51	.....
Oiled macadam					
(a) Patch and re-treat	370,110.80	.....	370,110.80	993	373
(b) Material stockpiled .....	.....	81,300.85	81,300.85	993	.....
Untreated macadam and graded					
(a) Blade and gravel	135,137.02	.....	135,137.02	1,132	119
(b) Material stockpiled .....	.....	7,751.99	7,751.99	1,132	.....
Base and subbase repairs	2,339.02	.....	2,339.02	.....	.....
<i>Shoulders</i>					
Patching and re-treating	11,422.55	.....	11,422.55	.....	.....
Blading and sodding	6,599.16	.....	6,599.16	.....	.....
Sidewalks and footpaths	204.52	.....	204.52	.....	.....
<i>Drainage</i>					
Ditches	49,374.65	.....	49,374.65	.....	.....
Drains and drainage tunnels	4,666.10	.....	4,666.10	.....	.....
Culvert cleaning	4,664.62	.....	4,664.62	.....	.....
<i>Structures</i>					
Box culverts and bridges 20					
feet and under in length	14,747.24	.....	14,747.24	.....	.....
Bridges longer than 20 feet	93,544.76	.....	93,544.76	.....	.....
Guard fence and sight posts	1,271.14	.....	1,271.14	.....	.....
Pipe culverts	4,324.83	.....	4,324.83	.....	.....
Parapets and retaining walls.....	20.11	.....	20.11	.....	.....
<i>Roadside</i>					
Removing weeds and brush	30,070.08	.....	30,070.08	.....	.....
Removal of debris	9,839.40	.....	9,839.40	.....	.....
Highway beautification	631.07	.....	631.07	.....	.....
Slide removal	25,435.61	.....	25,435.61	.....	.....
Fills, replace and widen	7,905.66	.....	7,905.66	.....	.....
Right of way fence	40.91	.....	40.91	.....	.....
Road approaches	2,764.68	.....	2,764.68	.....	.....
<i>Traffic Service</i>					
Traffic signals	85.79	.....	85.79	.....	.....
Signs and highway markers	12,208.61	.....	12,208.61	.....	.....
Traffic lines	8,986.04	.....	8,986.04	.....	.....
Snow removal	39,353.08	.....	39,353.08	.....	.....
Sanding icy pavements	5,233.82	.....	5,233.82	.....	.....
Flagging, towing, etc.	2,434.05	.....	2,434.05	.....	.....
Highway illumination	62.03	.....	62.03	.....	.....
Operation of road magnet	1,490.18	.....	1,490.18	.....	.....
<i>Supervision</i>	27,366.00	.....	27,366.00	.....	.....
Totals	\$ 917,461.56	\$ 90,211.95	\$ 1,007,673.51	2,361	\$427

TABLE XXI

Costs of Maintaining Secondary State Highways

Calendar Year 1943

Kind of Work	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Main- tained	Cost per Mile
<i>Surface</i>					
Concrete pavement repairs	\$ 7,505.00	\$	\$ 7,505.00	45	\$167
Asphaltic pavement repairs	14,856.63	.....	14,856.63	140	106
(a) Material stockpiled .....	.....	1,247.42	1,247.42	140	9
Bituminous macadam repairs	18,715.97	.....	18,715.97	52	360
(a) Material stockpiled .....	.....	18,878.61	18,878.61	52	363
Oiled macadam repairs	348,643.91	.....	348,643.91	993	351
(a) Material stockpiled .....	.....	61,312.25	61,312.25	993	62
Untreated and graded, repairs ..	155,397.41	.....	155,397.41	1,120	139
Base and subbase repairs	21,710.30	.....	21,710.30	.....	.....
<i>Shoulders</i>					
Blading and re-treating	17,837.25	.....	17,837.25	.....	.....
Sidewalks, islands, curbs	204.99	.....	204.99	.....	.....
<i>Drainage</i>					
Ditches	55,263.01	.....	55,263.01	.....	.....
Drainage tunnels	1,345.77	.....	1,345.77	.....	.....
Pipe culverts, siphons, flumes ..	11,017.75	.....	11,017.75	.....	.....
<i>Structures</i>					
Box culverts and bridges 20					
feet and under in length	20,613.00	.....	20,613.00	.....	.....
Bridges longer than 20 feet	57,816.83	74.33	57,891.16	.....	.....
Guard fence and sight posts	1,305.27	.....	1,305.27	.....	.....
Roadway tunnels	38.79	.....	38.79	.....	.....
Retaining walls, dikes, etc.	971.82	.....	971.82	.....	.....
<i>Roadbed and Right of Way</i>					
Removing weeds, brush, etc.	29,717.02	.....	29,717.02	.....	.....
Landscaping	23.76	.....	23.76	.....	.....
Slides, roadbed and slopes	45,691.47	.....	45,691.47	.....	.....
Road approaches	2,706.83	.....	2,706.83	.....	.....
<i>Traffic Service</i>					
Traffic signals	57.03	.....	57.03	.....	.....
Signs and highway markers	11,658.96	.....	11,658.96	.....	.....
Traffic lines	5,458.40	.....	5,458.40	.....	.....
Snow removal	41,012.64	.....	41,012.64	.....	.....
Sanding slippery pavement	2,401.11	.....	2,401.11	.....	.....
High water: Flag, patrol, tow	3,294.07	.....	3,294.07	.....	.....
Highway illumination	82.65	.....	82.65	.....	.....
Road magnet operation	2,022.13	.....	2,022.13	.....	.....
Sub-total	\$ 877,369.77	\$ 81,512.61	\$ 958,882.38	.....	.....
Maintenance superintendence	30,273.75	.....	30,273.75	.....	.....
Totals	\$ 907,643.52	\$ 81,512.61	\$ 989,156.13	2,350	\$421



THERE ARE NO CURVES FOR 24 MILES ON THE BOARDMAN-STANFIELD HIGHWAY SHOWN ABOVE



HOWE TRUSS SPAN OVER THE COAST FORK OF THE WILLAMETTE RIVER
EAST OF GOSHEN IN LANE COUNTY

REPORT OF TRAFFIC ENGINEERING DIVISION

F. B. CRANDALL, *Acting Traffic Engineer*

The Traffic Engineering Division has continued to direct its efforts to the end that safe and expedient traffic facilities be provided the road users. In general, the activities incident to such efforts may be cataloged into one of two groups: (1) those of a routine and recurring nature, and (2) special studies necessary to the solution of specific problems. Included in routine activities are such items as traffic audits, speed checks, accident statistics, and lesser activities, all of which furnish the mass of basic data necessary to an intelligent solution of the many problems confronting the department. In the main, the routine activities constitute continuing phases of the State-wide Highway Planning Survey. However, certain of the less important activities have had to be discontinued due to curtailment of personnel and facilities. Special problems which arise, in general, rely upon the use of basic data obtained through the routine activities supplemented to a varying degree by additional information pertinent to the particular problem at hand.

During the preceding biennial period (1941-1942), an appreciable part of the activities of the Traffic Engineering Division was directed toward transportation problems incident to sharply accelerated war effort. Throughout the years 1941-1942, considerable difficulty was experienced in keeping pace with the inaugural war activities as a result of sharply curtailed personnel. During the biennium now closing, activities have leveled off somewhat both as regards war production work and operating staff of the Traffic Division. It is not to be inferred by this statement that the Traffic Division has regained its normal operating personnel, but rather has stabilized itself at a level approximating half of the normal complement with a minimizing of personnel turnover as compared to the 1941-1942 biennium.

Throughout 1943-1944, a program of regularly scheduled state-wide traffic counts was maintained. It was necessary to operate a sharply curtailed program due to limitation of funds and personnel; however, such retrenchment as was necessary

was confined to a decrease in frequency and duration of traffic audits rather than any deletion of the some 105 audit locations which have been maintained since the time of the very comprehensive survey of 1936-1937 (OSHD Technical Reports 35 and 35-A). The basic purpose of these traffic count operations, namely, to obtain an indices to long-range year-to-year fluctuations and predictions, makes it mandatory that traffic count stations once established be retained throughout the years.

Supplementing the regularly scheduled manual traffic audits are the permanent automatic traffic recorder counts which have been maintained throughout and since the time of the intensive survey of 1936-1937. The automatic recorder installations are five in number and are located at strategic points over the highway net. The continuing traffic count data obtained from these permanent installations furnish, in large part, the basic control data necessary in expanding the periodic manual counts, and, in many cases, as a control in expanding special manual traffic audits to average year values. Traffic volume data obtained through the regularly scheduled traffic count survey are compiled and published annually (calendar year basis). The latest available published information is for the year 1943 and is contained in OSHD Technical Report 44-1.

At the last meeting of the State Legislature, statutory authority was vested in the State Highway Commission and a newly created State Speed Control Board permitting somewhat greater flexibility in the matter of speed regulation over and above that permitted by the arbitrary 20-25-55 miles per hour statutory speeds. The speed zoning law, as enacted, permitted speed zoning based on traffic and engineering investigations. Responsibility for such investigations rests with the Traffic Engineering Division, and at the inception of the speed zoning legislation, this division organized and equipped the necessary personnel for carrying on the work. Although considerable preparation and basic data as regards technique and operation was developed in this field, gasoline rationing and national maximum speed edicts precluded any extensive operations in

this direction. A lesser amount of work has been done, however, in connection with critical locations wherein the blanket 35-mile per hour speed was not a ceiling control. In connection with nationally curtailed speed as a result of the war effort, speed measuring equipment has been utilized in making periodic checks at fixed locations over the road net, as a means of determining the degree of observance of the 35-mile per hour ceiling on the part of vehicle operators. Comparative data in this connection has been compiled monthly and submitted to the Public Roads Administration for inclusion in compilations on a nation-wide basis.

In connection with routine activities during the course of war period, the Traffic Engineering Division, in co-operation with other state offices, issues monthly bulletins or tabulations showing month-to-month and year-to-year comparisons of vehicular traffic, vehicle registrations, vehicular speeds, Public Utilities Commission permits, and gasoline consumption.

The accident analysis work described in the Fourteenth Biennial Report has been continued though it has not been possible to utilize the data to the extent desired. However, data which will be useful to the Traffic Engineering Division in the postwar era has been compiled and will be expanded as conditions permit.

The coding and tabulating of accident reports is a function of the Traffic Engineering Division in co-operation with the Office of the Secretary of State, to which office the original reports are directed. The extension of mechanical tabulation work to include highway factors necessitated a revision of the coding procedure; accordingly, a revised code manual was prepared and published. Upon agreement with the Secretary of State, the Traffic Engineer has been designated as the traffic analysis authority as regards interpretation of motor vehicle accident types. Special consideration is given, in the reports to fatal accidents and a complete file of fatal accident information, including reports of officers' investigations, newspaper articles, and death certificates, is maintained. Statistical data for educational purposes are compiled periodically for, and disseminated by, the Office of the Secretary of State.



AUTOMATIC TRAFFIC RECORDER ON THE PACIFIC HIGHWAY EAST NEAR WOODBURN

Charts of vehicle mileage and accident rates have been prepared for each primary and secondary highway for the years 1940, 1941, 1942, and 1943. These data will be maintained and will serve as a definite establishment of trend for future comparisons.

A skeleton drafting crew has been maintained, the duties of which are the correcting and maintaining of up-to-date transportation and culture maps. A sizable stock of these maps is kept on hand, and there has been a wide-spread distribution of the maps to Army and Navy authorities as well as to large private industrial organizations and public agencies whose operations have to do with the current war effort or, in some instances, with projected postwar operations. The drafting personnel attends, also, to the preparation of the vicinity and condition diagrams used in the planning of inter-sectional treatments, channelization, signal installation, et cetera. During normal times, a field crew is maintained whose function is the obtaining of field data necessary to the preparation of vicinity and condition diagrams. The current manpower situation requires that the drafting room personnel operate as a field party when occasion demands. An appreciable number of man-hours was consumed by the drafting room personnel in preparation of the multi-colored illustrations and diagrams contained in OSHD Technical Bulletin No. 16, report on "Trans-Columbia River Interstate Bridge Studies", published in February, 1944.

The foregoing discussion deals primarily with routine activities of the Traffic Engineering Division. Although it is impractical to enumerate all the specific day-to-day problems which have been handled through the division, some of the more salient operations which may be cataloged as special work are discussed hereinafter.

Probably the most notable single unit of construction completed during the past biennium was the traffic interchange at the junction of Denver Avenue (US99W), Union Avenue (US99E), and Swift Boulevard (Secondary No. 120). This facility has relieved a very acute traffic congestion which existed prior to the improvement and which was accentuated

by the unprecedented generation of traffic resulting from the sustained upsurge of Army transport and civilian traffic incident to the war industry activities in the surrounding area. The prime function of the Traffic Engineering Division in connection with this facility was the preparation and prediction of traffic data used in the design of the facility and, subsequently, the assembly of factual data for the purpose of making "before" and "after" comparisons in measuring the efficacy of the facility. On the basis of the "before" and "after" comparison, a 65 per cent decrease in accidents has been realized notwithstanding an increase in traffic volume. In the matter of time saving, based on conservative values, the interchange affords a saving of 600 vehicle-hours per day. Spot speed checks show an average sustained speed of 35 miles per hour. Assigning conservative monetary values to the worth of an accident, the vehicle hour, and the cost of a vehicle stop, the total benefit accruing to the road-user annually amounts to \$250,000.

The City of Portland has been the prime focal point of industrial activity in connection with the war effort. In accordance with long established policy, the state and city have co-operated extensively in the solution of traffic problems in the metropolitan area. Here again, in so far as the war effort is concerned, the need for major changes and improvements, such as construction of access roads, has leveled off, such major projects having been taken care of to a large extent during the previous biennium (1941-1942).

In addition to co-operating with the City of Portland in respect to current matters, the Traffic Engineering Division has co-operated with the city and its several interested departmental divisions in the preparation of plans for postwar improvements. The postwar planning effort was given added impetus by the investigation and report on postwar plans made for the city by a group of private consultants. Throughout the course of the investigation by this private consulting firm, the Traffic Engineering Division made available such applicable data as were available in its files or as could be developed by its personnel.

In accordance with the policy of the Department, the division has made available to all municipalities in the state its facilities and experience, with the view of being of assistance in the solution of local problems.

An appreciable amount of time and effort has been given over to the preparation of reports and submission of data as requested by the Highway Traffic Advisory Committee to the War Department, in which committee the Traffic Engineer functions as secretary. Considerable numbers of the requests, directed to the Highway Traffic Advisory Committee by the Army and the Navy, for information relating to transportation facilities, have come within the province of the Traffic Engineering Division. For convenient fulfillment of such requests, a comprehensive report was prepared, entitled "Highway Capacities for Handling Troops and Tonnage of Equipment of Supplies to Pacific Coast Ports in Oregon." This report described in considerable detail the motor transport system within and across the state and included detailed maps showing optimum routings through municipalities and urban areas. Many requests of lesser scope dealing with transportation facilities have been answered as a part of the Division's routine.

Considerable time and effort of the Traffic Engineering Division has been directed toward co-operation with the Legislative Interim Committee for the Study of Motor Transportation in Oregon, which committee was appointed by the Governor under the authority of House Joint Resolution No. 5, and of which committee the Acting Traffic Engineer and the Assistant Traffic Engineer are members. The work of the committee has proceeded throughout the past biennium and will culminate in published reports to be submitted to the Governor.



RECONSTRUCTION SECTION OF THE JOHN DAY HIGHWAY
NEAR DIXIE PASS IN GRANT COUNTY

REPORT OF THE LEGAL AND RIGHT OF WAY DEPARTMENTS

J. M. DEVERS, *Chief Counsel*

The Legal and Right of Way branches of the Department set-up still function under one head. In that respect the arrangement does not differ from the arrangement reported in the 1941-1942 biennial report.

The Legal staff is composed of J. M. Devers, Chief Counsel; J. W. DeSouza, Assistant Counsel; I. M. Schannep and R. W. DeArmond, Assistant Attorneys; Pauline Welch, Secretary to the Chief Counsel; Anona Welch, Secretary to the Assistant Counsel; and Florence Carter, Secretary to I. M. Schannep, Assistant Attorney.

The Right of Way staff consists of A. B. Kneass, Real Property Manager; W. J. Minkiewitz and Esthel Benner, Real Property Office Men; C. W. Parker, M. D. McCallister, H. G. Benson, W. F. Collins, W. S. McChesney, William H. Witt, Ray Landon and R. W. Cozad, Right of Way Agents; Cecil Knox, Secretary to A. B. Kneass, and Gladys Cruzen, Stenographer.

During the period beginning with July 1, 1942, and ending with June 30, 1944, this Department has acquired 803 parcels of real property at a total cost of \$718,718.63. The real properties acquired are segregated into: 570 parcels acquired for right of way and 233 acquired for miscellaneous purposes, such as stockpile sites, parks, quarries and numerous other uses.

During the biennium covered by this report more than 150 contracts, leases, etc., have been prepared, and 101 construction contracts have been examined and passed upon as to form and other legal features.

In addition to the contracts and leases prepared, the Department has been interested in 84 condemnation actions involving real property acquisitions, of which number 41 have been settled either through agreement or trial. The Department has also been interested in several miscellaneous cases, in a few of which the Highway Department was named as defendant.

Highway projects during the biennium have felt the impact of war and war activities just as have many other public

works. In some respects highways have suffered more than have other public facilities for the reason that major highways have been subjected to heavy traffic, while at the same time upkeep and repair have been seriously restricted. Notwithstanding the fact that not much major highway work has been done during the past two years, the Right of Way and Legal branches of the Department have been kept busy negotiating for properties and handling many other matters incident to a public activity which has grown to the dimensions of the present Highway Department.

The properties acquired will be available and will be employed by the Highway Commission just as soon as Congress agrees upon the necessary Federal legislation. Had the bill now pending been passed by Congress during the early summer of 1944 or before the election recess, this State could have been well on its way with the programming, planning and acquiring of rights of way for postwar highway construction and highway betterment.

In a former report we emphasized the fact that the Legislature in the 1939 session vested in the Highway Commission authority to acquire right of access from abutting property to the public highway. In connection with major highway locations and relocations the Highway Commission has been exercising that statutory authority. The benefits of that policy will be realized when highways are constructed along these new routes, and the right of access to such highways is limited to specific approaches. In other words, under the policy approved and adopted by the Highway Commission, it will not be possible for new expensive highways, which are built primarily for speed, safety, convenience and for the accommodation of a large volume of traffic, to be reduced in character and value by reason of the construction and operation of hot dog stands, service stations and the like along the borders thereof.

It is common knowledge that there is persistent demand from persons who are interested in roadside development and other aesthetic features that outdoor advertising along the public highways be prohibited or controlled. The Highway Commission does not have express legislation to support any

such policy or program, but by cooperation with adjoining property owners the desired results are in some instances being accomplished. Perhaps the most wholesome and commendable instance of such development is in connection with the acquisition of rights of way for the relocated section of the Pacific Highway East between Steiwer Hill and Albany in Marion and Linn counties. When, through the right of way men, the Commission's purpose and desire were brought to the attention of the property owners from whom the Commission was purchasing right of way, they immediately expressed complete approval with the plan and gladly authorized the incorporation in the deeds conveying the real property needed for rights of way to the State, a clause by which it is provided that no outdoor advertising shall be permitted on the lands of the owner adjoining the new highway. Such prohibition is not limited in width or area but takes in all of the land of the abutting owner adjoining the highway and is therefore a much more comprehensive control than could ever be justified by legislation. Commendation for their co-operation in this respect is justly due the property owners who live along the new route.

If this Department were called upon to suggest needed legislation, the subject which it would perhaps put at the top of the list is legislation which would require power line companies, whose poles and facilities occupy public highways or are along public highways, to so equip and modernize their facilities as to prevent interference with car radio reception. The radio has become an essential factor in the transmission of information, entertainment and other matters of communication, and it is safe to say that a large number, if not the majority, of motor vehicles now using public highways are equipped with radios. Much of the enjoyment and use of the car radio is destroyed by reason of power line interference and interruption. If power line companies are to be permitted, as they now are, to occupy public highways with their facilities free of charge, it would appear that they should be required by legislation to construct and maintain their lines and facilities so as not to interfere with the primary and ordinary use

of the public highways. It is believed that effective and wholesome legislation on that subject would be welcomed.

There are other matters which could be made the subject of legislation, but discussion and recommendation of such matters must be left for presentation in some other report and by some other Department.



SECONDARY HIGHWAY NO. 351 BORDERING WALLOWA LAKE
IN WALLOWA COUNTY

REPORT OF MATERIALS DEPARTMENT

N. M. FINKBINER, *Materials Engineer*

The Materials Department comprises an organization of trained technicians equipped with specialized apparatus, functioning to assure the use of proper materials and scientifically sound combinations thereof in highway and bridge construction and maintenance.

The activities of the Materials Department include the sampling and testing of materials, the formulating of mixes and combinations of materials, the field inspection of materials and mixes used on paving projects, the inspection of certain commercially manufactured products, and the conductance of special physical and chemical experimentations.

During the biennium, the laboratory division of the Department has made 10,300 tests of basic materials and products, in each case reporting in detail as to acceptability, unsuitability, quality, physical or chemical properties and other data pertinent to the material or product involved and to its intended use. Approximately 870 tests, with subsequent reports, have been made on samples of materials and products submitted by federal, county and municipal agencies, the greater portion being in connection with federal-supervised war contracts and activities. Twenty-five separate Portland cement concrete mixes have been designed by the laboratory for use in the construction of bridges, curbs, concrete bases and concrete pavements under construction during the biennium.

The laboratory division, during the period covered by this report, has also been engaged in a few special studies and experimentations relative to certain new products, processes and methods which hold promise for improving the quality and reducing the cost of construction. Among these special studies, the following are worthy of note: (1) the testing of compounds intended for admixture with soils to make the soils resistant to water and thus to improve their stability as bearers of highway loads; (2) the testing of chemical products intended for incorporation with Portland cement concrete to so control dehydration therein as to eliminate the present

requirements of external curing agents; (3) the testing and comparing of various external curing agents for Portland cement concrete pavements; and (4) the testing of bond between bituminous materials and Portland cement concrete surfaces, with special emphasis on the effect which each of several types of concrete curing methods and concrete surface conditions has on the bond. Other laboratory experiments, in the nature of routine work, have included tests on air-entrained concrete, the comparing of flexural and tensile strengths of concrete in relation to compressive strengths, continued study on the effect of alkali on the expansion of mortars, and the development of a cold mix bituminous patching material composed of aggregates, stove oil and liquid asphalt which, although composed entirely of the ordinary materials always available to maintenance forces, provides them a mixture of workable cold patching material hitherto considered of attainment only through the use of special and more expensive liquid asphalt products.

The few special studies and experimentations which the laboratory division has been able to conduct, with limited personnel, have been pointed toward determining the practicable usefulness of new products and toward increasing scientific knowledge leading to improved technique in highway design and construction.

The field division of the Materials Department, consisting of both bituminous and Portland cement concrete plant inspectors and materials checkers, has been engaged in the field control of paving materials and mixes on six bituminous concrete paving projects, one Portland cement concrete paving project and two projects involving both types of paving. The field sampling, testing and control of materials and products on these projects has been maintained at a high level of efficiency.

The branch inspection office, at the division headquarters near Portland, has operated in its usual manner during the biennium and has sampled cement, steel, paints, bituminous materials and other materials and has inspected the fabricat-

ing, processing and manufacturing of products where such materials and products intended for highway use are stored or produced in the metropolitan area.

The activities of the Department have been somewhat below normal during the past biennium, due in large part to a decrease in highway construction. Nine of the eighteen skilled technicians normally employed are on leave from the Department for military service, and only three temporary replacements in personnel have been made as required to carry on the necessary functions of the Department.



TERREBONNE-LOWER BRIDGE COUNTY ROAD, SURFACED BY
DESCHUTES COUNTY AND OILED BY THE STATE FOR
ACCESS TO DIATOMITE DEPOSITS



SILVER FALLS IN GOLDEN AND SILVER FALLS STATE PARK,
COOS COUNTY

REPORT OF STATE PARKS DEPARTMENT

SAMUEL H. BOARDMAN, *State Parks Superintendent*

The history of Oregon's state parks began in 1921 when the Clatsop County Court tentatively transferred to the State Highway Department an area of eighteen acres, now known as Bradley State Park, at Clatsop Crest on the Columbia River Highway. This tract had been deeded to Clatsop County by the heirs of Elemar E. Bradley in whose memory the park was named.

From this modest beginning, the state park system has grown to include 76 areas designated as official state parks, 43 as minor state parks and 32 as roadside development areas, a total of 151 areas aggregating 46,868 acres. Of these, 27,639 acres were purchased, 11,240 acres were gifts to the State from 36 donors, 7,629 acres are held under lease from departments of the United States government, and 125 acres, on the Old Oregon Trail in the Blue Mountains, are held under a ninety-nine year lease from a private ownership.

These parks, primeval roadside forests and development areas are in diversified profusion along Oregon's network of highways from the shores of the Pacific Ocean to and over the mile high passes of the Blue Mountains and beyond, and from the Columbia River to the south boundaries of the State.

The wayside forest along the path followed by Oregon's first pioneers as they blazed the Old Oregon Trail over the Blue Mountains, is the only sheltering, evergreen forest in the hundreds of miles from either Cheyenne or Salt Lake City to The Dalles. The very fact of the presence of this living forest strip is an asset of incalculable present and future value to the State.

These park areas of various types are found beside the ocean, along the mighty Columbia River, they touch the shores of beautiful lakes and provide resting places on the mountain passes, while others look with intimacy upon the bewitching galaxy of snowy diadems that adorn the crest of the great Cascade Barrier, and, great or small, they are all of keen human interest.

The largest unit is The Cove Palisades park in Jefferson County, with an area of 7,000 acres, more or less, in a scenic, geologic wonderland, which includes sections of the always pleasing, and widely famous, Deschutes, Crooked and Metolius rivers whose waters merge within the park area.

Eight of the state parks were developed and facilitated by Civilian Conservation Corps forces under the supervision of the National Park Service, in collaboration with the State Parks Department, over a period of nearly nine years, from October, 1933, to April, 1942; they are: Silver Creek Falls Park in Marion County, Jessie M. Honeyman Memorial State Park on Cleawox and Woahink lakes in Lane County, Ecola Park in Clatsop County, Yaquina Park in Lincoln County, Humbug Mountain Park in Curry County, Talbot Park and its companion parks in the Columbia Gorge, and Emigrant Springs and Battle Mountain Parks in the Blue Mountains. Some of these are fully equipped with essential facilities, others have only the minor necessities. All are on or near the main routes of travel, except Silver Creek Falls Park.

Silver Creek Falls Park is the most extensively equipped and most highly developed of all state parks. Its scenic waterfalls and interlocking trail system attract more visitors than any of the others. Its commodious concession building, completed just as the war began, has not been opened, and will not be until normal conditions are restored. Despite the handicaps of the times, however, this park is still a popular, well-attended outing place.

A notable addition to the state park system in this biennium is the historic Champoege Park, 106 acres in extent. While Champoege Park has long been a state park under the jurisdiction of the State Board of Control, its incorporation in the state system under control of the State Parks Department was not effected until 1943. Other park acquisitions of the biennium included five new official state parks, three of which were gifts to the State, the donors being Ben and Kay Dorris, Jennie B. Harris, and Seneca Fouts, respectively. Other gift areas were a forested wayside on Canyon Creek by Douglas

County, an addition to Booth Park by Lake County, an addition to Short Sand Beach Park in Tillamook County by Beulah K. Reed, an addition to the same park by the logging firm of Donelson and Koppisch, and an area along the Wilson River Highway by the Weyerhaeuser Timber Company.

In Lake County, 31 acres were purchased as an addition to Booth Park. In Lincoln County, 30 acres were purchased and added to the Ocean Wayside Park. An 80-acre addition to Silver Creek Falls Park was purchased, bringing into the park the last waterfall on the upper reaches of the creek. A small tract of seven acres was purchased as an addition to the Spruce Railway roadside development area in Lincoln County. In Washington County, a 120-acre addition to the Wolf Creek forest wayside was purchased. In Lane County, a 40-acre tract of O. & C. land was leased from the Department of the Interior as an addition to the previously leased Blachly Mountain forest wayside.

The most extensive area acquired was a tract of 2,178 acres along the beautiful Camas Creek-John Day section of the Pendleton-John Day Highway, between Ukiah and Dale. Another new purchase was the Newburgh park tract of 1,398 acres in the Floras Creek section of the Curry County coast line.

The total acquisition in the 1943-1944 period was 5,873 acres. Of these, 1,628 acres were gift tracts, 3,844 acres were purchased, 40 acres were leased and 361 acres were transfers of areas previously in state ownership.

Park Attendance

Attendance estimates indicate that 685,000 persons visited state parks during the 1943-1944 biennium. Of these, it is estimated that 185,000 visited Lincoln County parks, that 200,000 visited other seacoast parks, that 80,000 visited the Silver Creek Falls Park and that 220,000 visited other inland parks.

Defense authority restrictions on the use of the coastal parks were withdrawn early in 1944, and there is every indication of a greatly increased park attendance when free travel is renewed.

REPORT OF TRAVEL AND INFORMATION DEPARTMENT

OSCAR CUTLER, *Acting Director*

The Travel and Information Department was established as a division of the Oregon State Highway Department in 1935 with the objective of advertising Oregon's scenic and recreational attractions to the world and thereby increasing tourist travel to this state. During the interval between 1935 and Pearl Harbor, tourist travel in Oregon increased over 50 per cent, becoming the third largest business in the state from the standpoint of income. The total of private automobile motorists alone increased from 300,000 in 1935 to 800,000 in 1941, bringing with them to the state approximately \$51,000,000 in new money.

Because of the war, no attempt is being made at the present time to encourage tourists to visit Oregon. No magazine or newspaper advertising was used during 1943. However, \$10,000 was used in magazine advertising in 1944 for the purpose of keeping the name "Oregon" in the minds of prospective future travelers. The magazines used in this advertising program were: National Geographic, American Magazine, Time, Newsweek, Westways, Highway Traveler, Field and Stream, Outdoor Life and Sports Afield. All publicity now given the state's attractions is predicated upon the slogan "Buy war bonds and stamps now and visit Oregon after the war is won." The total budget for the Travel and Information Department for 1943 was \$15,000. For 1944, the amount was increased to \$28,500.

In 1943 and 1944, 1,300,000 colored postal cards were printed for the free use of service men and women located in the state. They carried on the back the invitation to write to the Travel and Information Department for free illustrated booklets or information on the state's attractions. This has resulted in over 10,000 inquiries not only from the service men and women themselves but also from the families and friends to whom the cards were sent. Every state in the Union is represented among the inquiries and requests for information. Most of

these indicate genuine interest in postwar travel. It is generally believed by travel authorities that tourist travel after the war will be far in excess of any previous year. Data compiled by national travel agencies show that 40,000,000 persons took vacations of one week or more in the year 1941 and spent nearly five billion dollars. Questionnaires distributed by the National Association of Travel Officials and data obtained by travel agencies show conclusively that travel in the postwar years in America will be tremendous. It is estimated that sixty to seventy-five million people will travel or take some form of vacation in the first two years following the war and will spend from six to eight billion dollars. Oregon should realize from \$100,000,000 to \$150,000,000 from this tourist business. Competition for this vacation travel will be the keenest in travel history and the Travel and Information Department must be prepared to advertise Oregon's attractions as soon as restrictions are lifted.

A 1945 Oregon highway map is now in the process of publication and will be off the presses in December, 1944. This will be the first map to be published by the Department since 1942, publication having been discontinued for the interim due to conditions brought about by the war. The 1945 map will carry a front cover design showing the new state capitol and bearing the slogan "Drive Oregon Highways." The back cover will carry facsimiles of the Oregon state flag as well as other pertinent matter desired by persons interested in the state. Included will be drawings of the state flower (the Oregon grape), the state seal and the state bird (the meadow lark).

During 1943 and 1944, more than 20,000 copies of the state's general booklet, "Oregon—Cool Green Vacationland," were mailed to persons making direct inquiry to the department regarding the state's scenic and recreational attractions. Many of these requests came from service men in training in Oregon camps and indicated a desire on their part to return to Oregon for a postwar vacation.

In line with the Commission's policy of making no effort during the war to encourage tourist travel, no general distribution of the colored film, "The New Oregon Trail," was made during 1943 and 1944. However, individual copies of the film

were mailed out, in a few instances, for showing at conventions, exhibits and shows.

The Travel Department maintains a photographic laboratory which not only prepares and keeps on file many photographs of the scenic attractions of the state but also performs various photographic operations for the construction, maintenance and testing divisions of the Highway Department. The availability of scenic photographs makes it possible for the Department to obtain, each year, thousands of dollars of free advertising through editorial cooperation with magazines and newspapers. During 1944, the photographis department obtained many interesting photos, particularly kodachromes of Oregon scenes, for use in booklets and other postwar advertising.

It is anticipated that the activities of the Department in 1945 will consist principally of taking care of the inquiries, which continue to come to the Department in large quantities, and in making preparations for the huge tourist travel which is anticipated at the end of the war. This is in line with the belief that prompt restoration and expansion of Oregon's tourist industry can, and will, be a vital factor in the development of a stable postwar economy.

The work of the Travel and Information Department was directed by Harold B. Say from the time of its inception to June 20, 1941, when Mr. Say was called into the service of the U. S. Navy. Direction of the work is now in the hands of Oscar Cutler, Acting Director. An Advisory Committee consisting of thirteen members from the state at large gives advice and passes upon the general policies to be followed in the conduct of the work. Members of the Advisory Committee are:

John A. Laing, Chairman	Portland, Oregon
Donald J. Stirling, Member	Portland, Oregon
Dr. E. B. McDaniel, Member	Portland, Oregon
E. P. Hoyt, Member	Portland, Oregon
W. D. B. Dodson, Member	Washington, D. C.
E. B. Aldrich, Member	Pendleton, Oregon
Ralph R. Cronise, Member	Albany, Oregon
Frank Jenkins, Member	Klamath Falls, Oregon
Hugh Ball, Member	Hood River, Oregon
Chas. H. Reynolds, Member	La Grande, Oregon
Arch B. Sanders, Member	Marshfield, Oregon
Robert W. Ruhl, Member	Medford, Oregon
Wm. M. Tugman, Member	Eugene, Oregon

MISCELLANEOUS ACTIVITIES

Columbia River Bridge Survey

The forty-first regular session of the Oregon Legislature passed an enactment authorizing the State Highway Commission to construct or otherwise acquire a bridge or bridges over the Columbia River to the State of Washington. The enactment provided that, before any bridge was constructed under this act, the State Highway Commission and the appropriate officials of the State of Washington should cause a complete survey to be made. Pursuant to this directive, an agreement for such a survey was entered into with the State of Washington. This survey has been completed and the data therefrom are given in Technical Bulletin No. 16. "Report on Trans-Columbia River Interstate Bridge Studies," issued February, 1944.

Research

Research activities of the Highway Department during the past biennium have been restricted by the shortage of material, equipment, and personnel. The work that has been carried on has been principally the completion of projects carried over from the preceding biennium and such other projects as were of immediate and pressing need in connection with the war effort.

The study of short-span suspension bridges has been completed and the results reported in Technical Bulletin No. 18, issued in September of 1944.

The investigation of the effect of joint spacing and design in concrete pavements, which has been under way for the past four years, has been continued. These studies have been conducted on two sections of concrete pavement south of Salem, where expansion joint spacings of 30 feet to 495 feet have been installed. Data from these experimental sections have been the basis for an increase in the spacing of expansion joints in concrete pavements. It is expected that better riding pavements will result.

Observations on the Lombard Street-Killingsworth Street Section of the Northeast Portland Secondary Highway, which is a cooperative experimental project with the U. S. Public

Roads Administration, have been continued. This project is now three years old. Two progress reports have been made and further data are being accumulated. A final report will be made when sufficient time has elapsed to allow definite conclusions to be drawn.

In addition to the investigations cited above, reports on the geometric design of highway alignments and highway intersections, a study of rural sidewalks, and an investigation of the proposal to use log scale measurement rather than weight as a basis of the control of logging trucks, have been published as technical bulletins.

A list of the technical bulletins and reports published by the department follows:

Technical Bulletins

- No. 1. Loading Tests on a New Composite-type Short-span Highway Bridge Combining Concrete and Timber in Flexure, by Baldock and McCullough. 1933.
- No. 2. Application of Freyssinet Method of Concrete Arch Construction to the Rogue River Bridge in Oregon, by Gemeny and McCullough. 1933.
- No. 3. Loading Tests on Steel Deck Plate Girder Bridge with Integral Concrete Floor, by Paxson. 1934.
- No. 4. Design of Waterway Areas for Bridges and Culverts, by McCullough. 1934.
- No. 5. The Effect of Highway Design on Vehicle Speed and Fuel Consumption, by Beakey. 1937.
- No. 6. The Effect of Heavy Motor Transport on Highway Bridge Stresses, by McCullough and Paxson. 1937.
- No. 7. The Economics of Highway Planning (Revised September, 1938), by McCullough and Beakey. 1937.
- No. 8. Determination of Highway System Solvencies, by McCullough. 1937.

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- No. 9. The Merit System for Engineering Personnel, by Baldock and McCullough. 1938.
- No. 10. An Analysis of the Highway Tax Structure in Oregon, by McCullough, Beakey, and Van Scoy. 1938.
- No. 11. An Economic Analysis of Short-span Suspension Bridges for Modern Highway Loadings, by McCullough, Paxson, and Smith. 1938.
- No. 12. Light-reflecting Characteristics of Pavement Surfaces, by Paxson and Everson. 1939.
- No. 13. Rational Design Methods for Short-span Suspension Bridges for Modern Highway Loadings, by McCullough, Paxson and Smith. 1940.
- No. 14. The Derivation of Design Constants for Suspension Bridge Analysis, by McCullough, Paxson, and Smith. 1940.
- No. 15. The Experimental Verification of Theory for Suspension Bridge Analysis, by McCullough, Paxson, and Rosecrans. 1942.
- No. 16. Trans-Columbia River Interstate Bridge Studies, a Joint Report, by the Washington Department of Highways and the Oregon State Highway Department. 1944.
- No. 17. The Effect of Surface Type, Alignment, and Traffic Congestion on Vehicular Fuel Consumption, by Beakey, Crandall, Klein, and Head. 1944.
- No. 18. Multiple-span Suspension Bridges, Development and Experimental Verification of Theories, by McCullough, Paxson, and Rosecrans. 1944.

Technical Reports

- Report of the Interim Committee appointed to study the Motor Transportation Act, by the Interim Committee. 1937.
- No. 38-1. An Inventory of City Streets in Oregon, by Beakey, Van Scoy, and Walton. 1938.

- No. 38-1A. Addenda to an Inventory of City Streets in Oregon, by Beakey, Van Scoy, and Walton. 1938.
- No. 38-2. Rural Road Inventory of the State-wide Highway Planning Survey, by Beakey, Van Scoy, and Walton. 1938.
- No. 38-3. Motor Vehicle Allocation and Road Use Surveys of the State-wide Highway Planning Survey, by Beakey, Van Scoy, and Myers. 1938.
- No. 38-4. Fiscal Survey of the State-wide Highway Planning Survey, by Beakey, Van Scoy, and Keef. 1938.
- No. 38-5. Rural Traffic Survey of the State-wide Highway Planning Survey, by Beakey, Glenn, and Manning. 1938.
- No. 38-5A. Annual Daily Traffic Destiny Tables of the Rural Traffic Survey, State-wide Highway Planning Survey (report accompanied by traffic station maps), by Beakey, Glenn, and Manning. 1938.
- No. 38-6. Urban Traffic Survey (Part I and Part II), by Beakey, Glenn, and Manning. 1938.
- No. 39-1. Data Supplementary to Interim Committee Report to January 1, 1937, by Beakey and Myers. 1939.
- No. 39-2. A State-wide Survey of Aggregates, by Finkbiner. 1939.
- No. 39-3. Notes on the Application of Soil Mechanics to Highway Excavations and Embankments, by Paxson and Smith. 1939.
- No. 39-4. Offset Tables for Vertical Curves, by Swart. 1939.
- No. 39-5. Skid-resistant Characteristics of Oregon Pavement Surfaces, by Beakey, Klein, and Brown. 1939.
- No. 39-6. Record of Road Costs and Earnings on the Oregon State Highway System for the Calendar Year 1937, by Probert and Bonnett. 1939.

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- No. 40-1. Traffic Density Tables for 1939, by Beakey and Manning. 1940.
- No. 40-2. A Study of Expansion Joint Behavior in a Typical Western Oregon Pavement, by McCullough, Smith, and Webber. 1940.
- No. 40-3. Data Supplementary to Interim Committee Report of January 1, 1937, by Baldock, Beakey, and Myers. 1940.
- No. 41-1. Traffic Density Tables for 1940, by Beakey and Manning. 1941.
- No. 42-1. Traffic Density Tables for 1941, by Beakey and Manning. 1942.
- No. 42-2. Data Supplementary to Technical Bulletin No. 10, by McCullough and Myers. 1942.
- No. 43-1. Manual of Standard Practice for Paving Inspectors, by Finkbiner and O'Neil. 1943.
- No. 43-2. Manual of Standard Practice for Sampling Construction Materials, by Finkbiner. 1943.
- No. 43-3. Traffic Density Tables for 1942, by Crandall and Stein. 1943.
- No. 43-4. The Geometric Design of Highway Alignments and Highway Intersections, by Baldock. 1943.
- No. 44-1. Traffic Density Tables for 1943, by Crandall and Stein. 1944.
- No. 44-2. Effect of Expansion Joint Spacing in Typical Concrete Pavements of Western Oregon, by Paxson and Richards. 1944.
- No. 44-3. A Study of Rural Sidewalks, by Beakey, Crandall, and Head. 1944.
- No. 44-4. Log Scale Measurement vs. Weight as a Measure for Load Regulation, by Paxson and Spaulding. 1944.



RURAL SIDEWALK INSTALLATION ON THE PACIFIC HIGHWAY NORTH OF SALEM

Section Three

FINANCIAL STATEMENTS

Covering the Fiscal Period
July 1, 1942, to June 30, 1944

AND

STATISTICAL INFORMATION

PERTAINING TO

State Highways and County Roads

IN THE

STATE OF OREGON

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Table No. 1

DETAILED SUMMARY OF INCOME AND EXPENDITURES

July 1, 1942, to June 30, 1944

INCOME

Classification	Receipts July 1, 1942, to June 30, 1943	Receipts July 1, 1943, to June 30, 1944	Total Receipts July 1, 1942, to June 30, 1944
State Funds:			
Motor vehicle license fees	\$ 3,308,381.64	\$ 3,348,573.23	\$ 6,656,954.87
Gasoline tax	10,507,121.42	9,782,253.44	20,289,374.86
Diesel fuel tax		175,609.31	175,609.31
Motor transportation fees	1,617,512.95	1,859,255.39	3,476,768.34
Fines for traffic law violations	50,840.75	65,205.56	116,046.31
Interest and cash discounts	3,083.90	3,377.36	6,461.26
Sub-totals, state funds	\$15,486,940.66	\$15,234,274.29	\$30,721,214.95
Less Contributions:			
To state police	\$ 357,025.00	\$ 380,662.53	\$ 737,687.53
To counties	2,612,415.69	2,311,568.60	4,923,984.29
To cities		736,168.35	736,168.35
Sub-totals, contributions	\$ 2,969,440.69	\$ 3,428,399.48	\$ 6,397,840.17
Total net income, state funds	\$12,517,499.97	\$11,805,874.81	\$24,323,374.78
Cooperative Funds:			
County cooperative funds	\$ 18,675.56	\$ Cr. 8,633.48	\$ 10,042.08
Federal cooperative funds	2,629,974.16	3,726,647.19	6,356,621.35
Miscellaneous cooperative funds	4,686.23	32,500.00	37,186.23
Sub-total, cooperative funds	\$ 2,653,335.95	\$ 3,750,513.71	\$ 6,403,849.66
Grand total net income	\$15,170,835.92	\$15,556,388.52	\$30,727,224.44
Transfer to increase pay roll revolving fund		150,000.00	150,000.00
Balance on hand, July 1, 1942	4,353,814.58		4,353,814.58
Total funds available	\$19,524,650.50	\$15,706,388.52	*\$35,231,039.02

* Includes \$350,000 in pay roll revolving fund.

Table No. 1—Continued

EXPENDITURES

Classification	Expended July 1, 1942 to June 30, 1943	Expended July 1, 1943 to June 30, 1944	Total Expended July 1, 1942 to June 30, 1944
Capital Outlays:			
Construction, primary highways	\$3,601,740.87	\$ 2,543,529.29	\$ 6,145,270.16
Construction, secondary highways	344,992.43	476,595.66	821,588.09
Construction, county roads	1,411,257.16	74,645.24	1,485,902.40
Construction, flight strips	606,720.44	518,166.15	1,124,886.59
Cooperation in forest road work		Cr. 36,824.40	Cr. 36,824.40
Minor betterments, primary	75,359.60	67,391.69	142,751.29
Minor betterments, secondary	17,006.17	24,301.21	41,307.38
Surveys and construction engineering	165,007.74	255,738.96	420,746.70
Real property negotiation expense	37,915.53	36,719.51	74,635.04
Purchase of rights of way, quarries, etc.	477,439.56	193,730.12	671,169.68
Purchase of parks	11,829.99	35,718.96	47,548.95
Improvements in parks	8,028.29	89.70	8,117.99
Improvements at maintenance stations ..	12,694.42	5,789.01	18,483.43
Improvements of other properties	1,664.31	20,577.71	22,242.02
Equipment purchases, less credits for sales and depreciations	Cr. 217,103.27	Cr. 136,513.84	Cr. 353,617.11
Sub-totals, capital outlays	\$ 6,554,553.24	\$ 4,079,654.97	\$10,634,208.21
Maintenance:			
Special maintenance, primary	\$ 393,064.23	\$ 1,135,392.46	\$ 1,528,456.69
Special maintenance, secondary	45,480.83	92,971.03	138,451.86
General maintenance, primary	2,753,082.20	2,897,263.13	5,650,345.33
General maintenance, secondary	879,670.69	899,902.20	1,779,572.89
Maintenance of county roads, signs, etc.	55,102.70	29,435.75	84,538.45
Maintenance of city streets	179,342.64	103,793.43	283,136.07
District maintenance superintendence ..	118,449.10	133,903.04	252,352.14
Sub-totals, maintenance	\$ 4,424,192.39	\$ 5,292,661.04	\$ 9,716,853.43
Operation:			
Administration and general supervision ..\$	427,944.00	\$ 427,457.39	\$ 855,401.39
Planning and traffic surveys	60,227.36	53,847.91	114,075.27
Travel and information bureau	16,491.93	20,396.50	36,888.43
Radio communication system	10,936.38	10,470.18	21,406.56
Operation of parks	32,586.32	38,976.00	71,562.32
Operation of maintenance stations, etc. ..	31,149.22	24,191.46	55,340.68
Operation of drawbridges and ferries	60,372.99	74,832.91	135,205.90
Guarding highway structures	125,512.80	54,443.29	179,956.09
Truck load inspection	49,891.86	65,130.11	115,021.97
Research and special investigation	21,423.39	16,747.22	38,170.61
Increase in revolving fund	150,000.00		150,000.00
Miscellaneous general expense	66,611.16	97,471.84	164,083.00
Sub-totals, operation	\$ 1,053,147.41	\$ 883,964.81	\$ 1,937,112.22
Service and clearing accounts	Cr. 114,690.23	152,349.96	37,659.73
Bond interest and maturities	2,546,642.84	2,388,796.69	4,935,439.53
Totals	\$14,463,845.65	\$12,797,427.47	\$27,261,273.12

Table No. 2—SUMMARY OF EXPENDITURES JULY 1, 1942, TO JUNE 30, 1944
Cooperation in Expenditures

Classification of Expenditures	Total Amount Expended	State	County	Federal Government	Miscellaneous Contributors
Construction, primary highways	\$ 6,145,270.16	\$ 1,975,294.84	\$ 3,100.00	\$ 4,129,689.09	\$ 37,186.23
Construction, secondary highways	821,588.09	575,513.63		246,074.46	
Construction, county roads	1,485,902.40	563,461.52	6,942.08	915,498.80	
Construction, flight strips	1,124,886.59	59,521.59		1,065,359.00	
Cooperation in forest road work	Cr. 36,824.40	Cr. 36,824.40			
Minor betterments	184,058.67	184,058.67			
Surveys and engineering county work	420,746.70	420,746.70			
Real property negotiation field expense	74,635.04	74,635.04			
Purchase of rights of way, quarries, etc.	671,169.68	671,169.68			
Purchase of parks	47,548.95	47,548.95			
Improvements in parks	8,117.99	8,117.99			
Improvements at maintenance stations	18,483.43	18,483.43			
Improvements of other properties	22,242.02	22,242.02			
Equipment purchases, sales and depreciation	Cr. 353,617.11	Cr. 353,617.11			
Sub-totals, capital outlays	\$10,634,208.21	\$ 4,230,358.55	\$ 10,042.08	\$ 6,356,621.35	\$ 37,186.23
Special maintenance, primary	\$ 1,528,456.69	\$ 1,528,456.69			
Special maintenance, secondary	138,451.86	138,451.86			
General maintenance, primary	5,650,345.33	5,650,345.33			
General maintenance, secondary	1,779,572.89	1,779,572.89			
Maintenance of county roads, signs, etc.	84,538.45	84,538.45			
Maintenance of city streets	283,136.07	283,136.07			
District maintenance superintendence	252,352.14	252,352.14			
Sub-totals, maintenance	\$ 9,716,853.43	\$ 9,716,853.43			
Administration and general supervision	\$ 855,401.39	\$ 855,401.39			
Planning and traffic surveys	114,075.27	114,075.27			
Travel and information bureau	36,888.43	36,888.43			
Radio communication system	21,406.56	21,406.56			
Operation of parks	71,562.32	71,562.32			
Operation of maintenance stations, right of way, etc.	55,340.68	55,340.68			
Operation of drawbridges and ferries	135,205.90	135,205.90			
Miscellaneous	647,231.67	647,231.67			
Sub-totals, operation	\$ 1,937,112.22	\$ 1,937,112.22			
Service and clearing accounts	37,659.73	37,659.73			
Bond interest and maturities	4,935,439.53	4,935,439.53			
Totals	\$27,261,273.12	\$20,857,423.46	\$ 10,042.08	\$ 6,356,621.35	\$ 37,186.23

Table No. 3

MILEAGES OF HIGHWAY CONSTRUCTION WORK PERFORMED

by the

STATE HIGHWAY COMMISSION

New Construction and Reconstruction

Highway System and Year	Concrete Pave- ment (Miles)	Bitu- minous Pavement (Miles)	Bitu- minous Macadam (Miles)	Oiled Surfac- ing (Miles)	Rock and Gravel Surfacing (Miles)	Grading (Miles)	Bridges Over 20 Feet (No.)	Grade Separations (No.)
Primary:								
1917-1934	226.4	651.6	769.6	1,915.9	3,437.4	3,352.7	896	23
1935	6.7	7.1	12.8	11.3	39.4	26.1	12	5
1936	19.9	0.1	39.8	240.5	104.2	93.5	36	10
1937	26.3	13.8	85.5	114.0	140.7	142.2	18	6
1938	18.5	5.7	31.3	177.0	142.8	72.9	15	4
1939	2.3	2.3	.....	242.3	172.7	53.8	8	2
1940	24.9	6.1	42.8	170.3	166.0	62.4	32	5
1941	3.2	1.6	44.7	65.7	110.8	96.3	15	2
1942	17.1	9.7	38.9	51.1	104.2	95.0	31	1
1943	0.8	6.3	17.4	8.4	33.3	26.8	4	3
1944	2.8	8.5	7.3	11.5	23.0	18.3	15	.....
Totals	348.9	712.8	1,090.1	3,008.0	4,474.5	4,040.0	1,082	61
Secondary:								
1933-1934	2.1	.....	10.0	10.1	30.0	68.2	49	1
1935	0.6	0.8	1.9	23.3	37.1	43.1	11	.....
1936	0.7	0.7	4.9	77.1	76.5	41.1	11	4
1937 .....	.....	.....	.....	95.6	26.8	7.2	2	2
1938	0.4	.....	.....	36.3	31.8	27.5	7	2
1939	0.2	.....	.....	137.3	61.6	44.0	3	.....
1940 .....	.....	.....	4.9	65.6	47.5	58.7	3	.....
1941	4.2	.....	8.5	125.0	126.3	41.3	16	1
1942	0.5	1.7	.....	75.3	97.2	51.7	3	1
1943 .....	.....	0.3	.....	6.0	9.1	6.3	.....	.....
1944 .....	.....	6.2	.....	71.0	84.1	13.2	2	.....
Totals	8.7	9.7	30.2	722.6	628.0	402.3	107	11
Other Roads:								
1935	2.4	.....	1.6	0.2	1.6	.....	.....	.....
1936	1.2	12.9	5.9	61.3	32.0	34.3	3	3
1937 .....	.....	.....	.....	5.4	5.4	.....	.....	2
1938	0.1	.....	1.5	42.1	33.4	11.4	1	.....
1939	0.1	6.9	.....	26.4	17.9	18.7	.....	1
1940	0.5	.....	.....	24.5	32.7	24.0	1	.....
1941	0.3	2.6	6.5	19.3	28.9	21.0	1	.....
1942	2.5	6.4	13.9	23.2	38.1	36.2	7	.....
1943	0.1	0.5	.....	9.2	15.0	13.2	1	1
1944 .....	.....	.....	3.4	12.2	21.8	19.3	5	.....
Totals	7.2	29.3	32.8	223.8	226.8	178.1	19	7

Table No. 3—Continued
Resurfacing, Widening and Betterment

Highway System and Year	Pavement Resurfacing and Widening (Miles)	Non-skid Treatment of Pavement (Miles)	Contract Re-oiling (Miles)	Rock and Gravel Resurfacing (Miles)	Grade Widening (Miles)
Primary:					
1917-1934	19.4	399.6	.....	143.8	223.6
1935 .....	.....	.....	.....	11.6	6.2
1936	12.6	.....	.....	22.2	30.8
1937	16.0	.....	.....	24.2	.....
1938 .....	.....	.....	96.6	5.3	18.2
1938 .....	.....	.....	75.2	21.7	42.6
1940 .....	.....	.....	119.2	32.9	14.8
1941 .....	.....	20.3	20.3	.....	10.0
1942 .....	.....	.....	1.1	.....	6.6
1943 .....	.....	.....	16.0	1.1	.....
1944 .....	.....	.....	1.1	.....	.....
Totals	48.0	419.9	329.5	262.8	352.8
Secondary:					
1940 .....	.....	.....	14.6	.....	.....
1941 .....	.....	.....	5.4	.....	.....
1942 .....	.....	.....	.....	.....	.....
1943 .....	.....	.....	.....	.....	.....
1944 .....	.....	.....	34.9	5.1	17.9
Totals .....	.....	.....	54.9	5.1	17.9

Table No. 4
MILEAGES OF STATE HIGHWAYS MAINTAINED
BY THE STATE HIGHWAY COMMISSION

Highway System and Year	Concrete Pavement	Bituminous Pavement	Bituminous Macadam	Oiled Rock Surfacing	Un-oiled Rock Surfacing	Graded and Un-improved Earth	Total
Primary:							
1936	250	580	918	1,656	750	406	4,560
1937	297	581	1,082	1,683	715	233	4,591
1938	309	563	1,080	1,890	559	219	4,620
1939	307	561	1,103	2,084	450	175	4,680
1940	322	530	1,116	2,244	374	131	4,717
1941	325	527	1,122	2,367	330	89	4,760
1942	336	533	1,208	2,313	282	109	4,781
1943	338	524	1,218	2,329	242	139	4,790
Secondary:							
1936	37	115	25	327	957	578	2,039
1937	43	115	14	485	949	586	2,192
1938	51	127	38	491	1,017	484	2,208
1939	51	128	63	613	982	389	2,226
1940	46	134	41	727	915	445	2,308
1941	54	133	48	939	794	381	2,349
1942	45	140	51	993	757	375	2,361
1943	50	140	52	993	696	419	2,350

See previous reports for details covering years prior to 1936.

Table No. 5

STATE FUNDS RECEIVED AND EXPENDED BY THE STATE
HIGHWAY COMMISSION

From 1917 to June 30, 1944

Year	Net Receipts (State Funds Only)	Net Expenditures (State Funds Only)
1917 (including \$94,418.14 balance from 1916)	\$ 1,802,190.22	\$ 674,249.61
1918	1,759,600.15	2,214,007.87
1919	7,458,614.05	6,248,304.16
1920	11,320,354.05	11,381,606.97
1921	13,550,136.40	15,000,824.65
1922	9,608,966.45	7,724,688.96
1923	7,664,977.79	7,287,991.77
1924	6,115,536.48	6,916,867.91
1925	10,231,908.30	10,611,283.45
1926	7,345,080.19	7,927,130.75
1927	8,627,279.00	8,474,609.91
1928	8,721,396.09	8,975,204.79
1929	10,658,473.58	10,160,542.57
1930	13,897,663.65	12,808,014.45
1931	10,930,545.38	11,108,835.57
1932	9,925,665.72	10,812,369.81
1933	7,804,925.99	7,860,497.50
1934	8,798,396.81	7,517,063.41
1935	14,469,922.86	13,687,022.82
1936	10,943,742.46	13,194,698.50
1937	11,996,069.07	12,595,127.42
1938	11,418,916.44	11,261,453.70
1939	11,821,364.62	*11,158,189.25
1940	12,759,332.27	*12,156,575.57
1941	15,093,637.57	14,874,800.01
1942	13,450,738.45	13,290,781.61
1943	11,888,155.10	9,128,388.61
1944 (to June 30)	7,049,513.08	4,092,204.72
Totals	\$277,113,102.22	\$269,143,336.32
Balance on hand July 1, 1944		*7,969,765.90
Totals		\$277,113,102.22

* Includes \$350,000 in pay roll revolving fund.

Table No. 6

YEARLY EXPENDITURES ON WORK HANDLED UNDER THE
SUPERVISION OF THE STATE HIGHWAY
COMMISSION

From 1917 to June 30, 1944

Year	State Funds	County Funds	Government Funds	Miscellaneous Contributor's Funds	Totals
1917	\$ 674,249.61	\$ 270,162.37	\$	\$	\$ 944,411.98
1918	2,214,007.87	439,562.42	.....	.....	2,653,570.29
1919	6,248,304.16	368,550.01	224,851.60	.....	6,841,705.77
1920	11,381,606.97	866,836.96	1,096,027.33	19,364.26	13,363,835.51
1921	15,000,824.65	984,296.42	2,181,956.65	47,913.16	18,214,990.88
1922	7,724,688.96	3,727,388.65	1,043,695.07	120,354.97	12,616,127.65
1923	7,287,991.77	2,180,266.25	1,719,088.71	149,075.88	11,336,422.61
1924	6,916,867.91	1,544,267.37	1,118,777.53	136,150.73	9,716,063.54
1925	10,611,283.45	1,297,105.54	1,327,328.92	92,638.46	13,328,356.37
1926	7,927,130.75	704,856.67	1,264,688.74	89,761.29	9,986,437.45
1927	8,474,609.91	611,924.22	1,111,521.64	65,387.07	10,263,442.85
1928	8,975,204.79	683,283.51	582,440.20	27,315.83	10,268,244.33
1929	10,160,542.57	532,907.15	624,415.28	9,969.29	11,327,834.29
1930	12,808,014.45	280,079.24	1,565,288.34	14,554.57	14,667,936.60
1931	11,108,835.57	236,863.93	4,535,069.46	19,947.46	15,900,716.42
1932	10,812,369.81	165,238.34	1,703,369.15	63,513.25	12,744,490.55
1933	7,860,497.50	168,028.79	2,723,724.39	26,912.05	10,779,162.73
1934	7,517,063.41	174,720.24	6,023,993.01	3,522.50	13,719,299.16
1935	13,687,022.82	133,562.57	4,165,503.33	10,000.00	17,996,088.72
1936	13,194,698.50	129,233.41	6,375,343.26	8,773.61	19,708,048.78
1937	12,595,127.42	80,174.48	4,589,894.89	62,146.90	17,327,343.69
1938	11,261,453.70	186,284.48	2,873,801.64	25,000.00	14,346,539.82
1939	11,158,189.25	9,480.34	2,652,475.77	12,202.46	13,832,347.82
1940	12,156,575.57	4,000.00	2,926,250.31	30,976.06	15,117,801.94
1941	14,874,800.01	62,041.05	2,810,894.93	7,250.00	17,754,985.99
1942	13,290,781.61	8,492.08	2,273,616.82	13,926.38	15,586,816.89
1943	9,128,388.61	1,550.00	4,341,584.26	32,500.00	13,504,022.87
1944 (to June 30)	4,092,204.72	.....	1,025,855.19	.....	5,118,059.91
Totals	\$269,143,336.32	\$15,851,156.49	\$62,881,456.42	\$1,089,156.18	\$348,965,105.41

Table No. 7
SUMMARY OF EXPENDITURES BY MAJOR ITEMS
From 1917 to June 30, 1944

Classification of Expenditures	Total Amount Expended	Co-operation in Expenditures				Miscellaneous Contributors
		State	County	Government		
CAPITAL OUTLAYS						
Contract construction	\$168,060,663.39	\$ 89,531,013.87	\$ 15,220,787.69	\$ 62,221,600.21	\$ 1,087,261.62	
Co-operation in forest road work	6,068,679.46	5,574,329.09	494,350.37	.....	.....
Minor betterments	7,151,651.61	7,142,378.87	5,272.74	4,000.00	.....
Surveys	4,656,333.08	4,620,260.87	15,672.21	20,400.00	.....
Sub-totals, construction	\$185,937,327.54	\$106,867,982.70	\$ 15,736,083.01	\$ 62,246,000.21	\$ 1,087,261.62	
Rights of way, quarries, etc.	6,610,787.78	6,600,878.03	9,909.75	.....	.....
Parks	962,292.83	947,313.83	.....	14,979.00	.....
Buildings and improvements (except parks)	1,042,843.92	1,010,380.32	.....	32,459.60	.....
Equipment (subsequent to 1934 only)	378,933.45	378,933.45	.....	.....	.....
Sub-totals, capital outlays (including construction)	\$194,932,185.52	\$115,805,492.33	\$ 15,745,992.76	\$ 62,293,438.81	\$ 1,087,261.62	
MAINTENANCE						
Special maintenance	\$ 8,648,421.47	\$ 8,469,745.16	\$ 2,516.17	\$ 176,047.45	\$ 112.69	
General maintenance	55,310,954.33	55,217,984.18	85,848.05	5,340.23	1,781.87	
Sub-totals, maintenance	\$ 63,959,375.80	\$ 63,687,729.34	\$ 88,364.22	\$ 181,387.68	\$ 1,894.56	
MISCELLANEOUS						
Administration and general supervision	\$ 7,319,123.51	\$ 7,319,123.51	\$ .....	.....	\$ .....
Miscellaneous operations	5,411,501.30	4,988,071.86	16,799.51	406,629.93	.....
Bond interest and maturities	77,342,919.28	77,342,919.28	.....	.....	.....
Sub-totals, miscellaneous	\$ 90,073,544.09	\$ 89,650,114.65	\$ 16,799.51	\$ 406,629.93	\$	
Totals	\$348,965,105.41	\$269,143,336.32	\$ 15,851,156.49	\$ 62,881,456.42	\$ 1,089,153.18	

For a summary of expenditures in detail see page 161.

Table No. 8—SUMMARY OF EXPENDITURES FROM 1917 TO JUNE 30, 1944
Co-operation in Expenditures

Classification of Expenditures	Total Amount Expended	State	County	Government	Miscellaneous Contributors
Construction, primary highways	\$149,589,891.10	\$ 80,216,899.78	\$ 14,462,173.34	\$ 53,842,659.31	\$ 1,068,158.67
Construction, secondary highways	11,357,474.30	6,529,294.31	424,232.57	4,403,292.08	655.34
Construction, county roads	5,988,411.40	2,725,292.19	334,381.78	2,910,289.82	18,447.61
Construction, flight strips	1,124,886.59	59,527.59		1,065,359.00	
Co-operation in forest road work	6,068,679.46	5,574,329.09	494,350.37		
Minor betterments, primary, secondary and county roads	7,151,651.61	7,142,378.87	5,272.74	4,000.00	
Survey and engineering county work	4,656,333.08	4,620,260.87	15,672.21	20,400.00	
Real property negotiation field expense	417,589.24	417,589.24			
Purchase of rights of way, quarries, etc.	6,193,198.54	6,183,288.79	9,909.75		
Purchase of parks	692,805.83	692,805.83			
Improvements in parks	269,487.00	254,518.00		14,979.00	
Improvements at maintenance stations	615,523.90	583,064.30		32,459.60	
Improvements of other properties	427,320.02	427,320.02			
Equipment purchases, sales and depreciation (net)	378,933.45	378,933.45			
Sub-totals, capital outlays	\$194,932,185.52	\$115,805,492.33	\$ 15,745,992.76	\$ 62,293,438.81	\$ 1,087,261.62
Special maintenance, primary	\$ 8,035,101.89	\$ 7,872,400.37	\$ 528.87	\$ 162,059.96	\$ 112.69
Special maintenance, secondary	6,397,471.71	508,087.39	1,987.30	13,920.02	
Special maintenance, county roads	9,344.87	9,271.40		67.47	
General maintenance, primary	44,476,932.44	44,386,006.93	83,773.41	5,340.23	1,781.87
General maintenance, secondary	7,337,169.40	7,936,738.29	431.11		
County road maintenance, signs, etc.	549,074.55	547,431.02	1,643.53		
City street maintenance (not on state system)	323,424.09	323,424.09			
District maintenance superintendence	2,024,383.85	2,024,383.85			
Sub-totals, maintenance	\$ 63,959,375.80	\$ 63,687,729.34	\$ 88,364.22	\$ 181,387.68	\$ 1,894.56
Administration and general supervision	\$ 7,319,123.51	\$ 7,319,123.51			
Planning and traffic surveys	1,025,691.55	644,333.62		381,357.93	
Travel and information bureau	690,291.23	690,291.23		25,272.00	
Radio communication system	144,292.94	119,020.94			
Operation of parks	333,754.68	333,754.68			
Operation of maintenance stations, right of way, etc.	442,693.47	442,693.47			
Drawbridges and ferries	1,221,391.37	1,214,591.86	16,799.51		
Miscellaneous	2,027,333.59	2,027,333.59			
Sub-totals, operation	\$ 13,214,572.34	\$ 12,791,142.90	\$ 16,799.51	\$ 406,629.93	\$
Service and clearing accounts	Cr. 483,947.53	Cr. 483,947.53			
Bond interest and maturities	77,342,919.28	77,342,919.28			
Totals	\$348,965,165.41	\$269,143,336.32	\$ 15,851,156.49	\$ 62,881,456.42	\$ 1,089,156.13

Table No. 9

SCHEDULE OF YEARLY INCOMES FROM DIFFERENT SOURCES

From 1917 to June 30, 1944

Source of Income	1917 to 1937 Inclusive	1938	1939	1940	1941
Balance on hand December 1, 1916	\$ 94,413.14	\$	\$	\$	\$
Bond sales (including accrued interest)	53,827,920.04	750,000.00	.....	.....	.....
Motor vehicle license fees	60,254,716.07	2,521,844.16	2,959,667.67	2,900,537.53	3,629,074.04
Gasoline tax	83,055,827.68	9,769,732.13	10,271,167.85	11,301,492.45	12,867,932.37
Motor transportation fees	4,058,149.30	827,332.15	921,472.76	1,104,338.56	1,297,786.27
One-quarter mill property tax	1,724,032.33	.....	.....	.....	.....
Interest on bank balances, discounts, etc.	544,740.03	7.95	.61	9,573.78	9,758.70
Fines for traffic law violations	312,724.60	23,627.68	23,657.50	30,291.64	41,145.05
Transfer to increase pay roll revolving fund	75,000.00	.....	50,000.00	.....	.....
Sub-totals of state funds (gross)	\$203,947,528.19	\$ 13,892,544.07	\$ 14,225,966.39	\$ 15,346,233.96	\$ 17,845,696.43
Less contributions to state police	1,602,980.13	347,860.00	340,133.75	352,225.00	341,097.47
Less contributions to counties	8,400,000.00	2,125,767.63	2,064,468.02	2,234,676.69	2,410,961.39
Less contributions to state general fund	313,103.37	.....	.....	.....	.....
Sub-totals of state funds (net)	\$193,631,444.69	\$ 11,418,916.44	\$ 11,821,364.62	\$ 12,759,332.27	\$ 15,093,637.57
County co-operation	15,579,308.54	186,284.48	9,480.34	4,000.00	62,041.05
Federal Government co-operation	43,976,977.50	2,873,801.64	2,652,475.77	2,926,250.31	2,810,894.93
Miscellaneous co-operation	967,301.28	25,000.00	12,202.46	30,976.06	7,250.00
Totals	\$254,155,032.01	\$ 14,504,002.56	\$ 14,495,523.19	\$ 15,720,558.64	\$ 17,973,823.55

Table No. 9—Continued
SCHEDULE OF YEARLY INCOMES FROM DIFFERENT SOURCES

From 1917 to June 30, 1944

Source of Income	1917 to 1941 inclusive	1942	1943	1944 (To June 30)	Dec. 1, 1916 to June 30, 1944
Balance on hand December 1, 1916	\$ 94,418.14	\$	\$	\$	\$ 94,418.14
Bond sales (including accrued interest)	54,577,920.04				54,577,920.04
Motor vehicle license fees	72,265,839.47	3,224,862.56	3,234,580.79	2,875,582.60	81,600,865.42
Gasoline tax	127,266,152.48	11,816,457.22	9,648,354.61	4,320,627.38	153,051,591.69
Diesel fuel tax			65,082.40	110,526.91	175,609.31
Motor transportation fees	8,209,079.04	1,516,892.51	1,735,854.20	920,813.32	12,382,639.07
One-quarter mill property tax	1,724,032.33				1,724,032.33
Interest on bank balance, discounts, etc.	564,081.07	4,796.42	2,907.87	1,902.22	573,637.58
Fines for traffic law violations	431,446.47	47,054.10	54,689.68	36,073.87	569,264.12
Transfer to increase pay roll revolving fund	125,000.00		150,000.00		275,000.00
Sub-totals of state funds (gross)	\$265,257,969.04	\$ 16,610,062.81	\$ 14,891,469.55	\$ 8,265,526.30	\$305,025,027.70
Less contributions to state police	2,984,296.35	344,252.46	390,898.76	168,276.27	3,887,723.84
Less contributions to counties	17,235,873.73	2,815,071.90	2,612,415.69	311,568.60	22,974,929.92
Less contributions to cities				736,168.35	736,168.35
Less contributions to state general fund	313,103.37				313,103.37
Sub-totals of state fund (net)	\$244,724,695.59	\$ 13,450,738.45	\$ 11,888,155.10	\$ 7,049,513.08	\$277,113,102.22
County co-operation	15,841,114.41	8,492.08	1,550.00		15,851,156.49
Federal Government co-operation	55,240,400.15	2,273,616.82	4,341,584.26	1,025,855.19	62,881,456.42
Miscellaneous co-operation	1,042,729.80	13,926.38	32,500.00		1,089,156.18
Totals	\$316,848,939.95	\$ 15,746,773.73	\$ 16,263,789.36	\$ 8,075,368.27	\$356,934,871.31

Table No. 10

SCHEDULE OF YEARLY EXPENDITURES

From 1917 to June 30, 1944

The expenditures in this table include all expenditures in connection with work handled under the direct supervision of the State Highway Commission during the period December 1, 1916, to June 30, 1944.

Classification of Expenditures	1917 to 1937 Inclusive	1938	1939	1940	1941
Construction, primary highways	\$124,631,778.97	\$ 3,704,848.16	\$ 4,263,296.38	\$ 5,557,962.24	\$ 5,862,507.92
Construction, secondary highways	5,653,198.31	527,058.56	830,342.17	575,782.58	1,344,747.54
Construction, county roads	1,984,161.36	293,644.26	482,112.38	370,953.32	414,835.15
Flight strips					
Co-operation in forest road work	5,810,003.86	Cr. 25,000.00	35,000.00		285,500.00
Minor betterments, primary	5,297,289.34	151,203.32	187,233.39	234,909.58	254,144.40
Minor betterments, secondary	336,638.83	98,236.34	102,307.29	99,977.16	126,166.84
Minor betterments, county roads					
Surveys and engineering county work	3,054,933.51	252,379.65	213,773.39	261,635.91	307,343.05
Sub-total, construction	\$146,748,014.18	\$ 5,002,370.29	\$ 6,114,065.00	\$ 7,101,220.79	\$ 8,595,244.90
Real property negotiation field expense	168,018.53	44,201.38	45,782.90	28,222.37	35,771.29
Purchase of rights of way, quarries, etc.	2,344,179.70	587,649.92	542,229.30	414,128.94	1,140,986.03
Purchase of parks	300,674.07	77,791.15	72,532.95	72,201.01	104,419.29
Improvements in parks	158,044.78	12,049.48	11,042.17	27,508.37	25,364.97
Improvements at maintenance stations	236,516.02	17,841.35	71,295.56	129,927.26	67,021.65
Improvements of other properties	122,866.65	63,468.89	16,884.57	28,651.75	143,313.66
Equipment purchases, sales and depreciation (net)	313,695.95	Cr. 47,325.75	47,898.36	181,755.40	184,240.82
Sub-totals, capital outlays (including construction)	\$150,392,009.83	\$ 5,758,046.71	\$ 6,921,730.81	\$ 7,984,615.89	\$ 10,296,362.61

Special maintenance, primary	\$ 5,264,670.77	\$ 324,138.11	\$ 270,804.59	\$ 314,288.28	\$ 372,443.76
Special maintenance, secondary	18,929.40	42,559.88	55,957.71	42,138.76	57,671.94
Special maintenance, county roads					
General maintenance, primary	28,865,572.36	2,304,398.51	2,296,980.98	2,439,501.08	2,740,332.38
General maintenance, secondary	2,418,003.63	606,856.57	584,307.02	687,794.03	760,360.41
County road maintenance, signs, etc.		20,318.73	19,796.37	12,606.66	10,236.40
City street maintenance (not on state system)					6,178.67
District maintenance superintendence	1,238,659.73	114,994.93	110,409.11	110,827.42	106,300.99
Sub-totals, maintenance	\$ 37,805,835.94	\$ 3,413,266.73	\$ 3,338,255.78	\$ 3,607,157.23	\$ 4,053,524.55
Administration and general supervision	\$ 4,403,331.11	\$ 444,471.33	\$ 439,553.42	\$ 461,151.50	\$ 468,523.49
Planning and traffic surveys	507,998.94	137,778.47	60,637.46	75,196.75	89,747.39
Travel and information bureau	155,103.55	115,603.04	145,974.22	109,682.21	101,253.18
Radio communication system	79,372.39	11,859.70	12,867.20	9,793.29	7,393.06
Operation of parks	92,621.99	27,864.52	35,449.94	38,791.26	48,258.18
Operation of maintenance station, R/W., etc.	84,802.30	13,208.74	30,584.20	42,350.02	61,193.46
Operation of drawbridges and ferries	880,566.61	40,615.01	43,966.13	49,330.90	50,725.59
Miscellaneous	1,164,001.58	35,197.37	90,894.51	48,938.96	68,322.03
Sub-totals, operation	\$ 7,367,798.47	\$ 826,598.18	\$ 859,927.08	\$ 835,234.89	\$ 895,916.38
Service and clearing accounts	Cr. 232,818.72	Cr. 79,136.07	Cr. 63,960.08	Cr. 67,930.26	Cr. 229,902.95
Bond interest and maturities	58,371,704.60	4,427,764.27	2,776,394.23	2,758,724.19	2,739,085.40
Totals	\$253,704,530.17	\$ 14,346,539.82	\$ 13,832,347.82	\$ 15,117,801.94	\$ 17,754,985.99

Table No. 10—Continued
 SCHEDULE OF YEARLY EXPENDITURES
 From 1917 to June 30, 1944

Classification of Expenditures	1942	1943	1944 (to June 30)	Reclassification Transfers	1917 to June 30, 1944
Construction, primary	\$ 4,845,241.42	\$ 2,468,878.93	\$ 403,983.93	Cr. \$2,148,606.85	\$140,589,891.10
Construction, secondary	694,694.46	301,710.66	230,173.73	1,199,766.29	11,357,474.30
Construction, county roads	675,924.78	769,501.70	134,717.37	382,561.08	5,988,411.40
Construction, flight strips	89,227.32	1,006,016.37	29,642.90	.....	1,124,886.59
Co-operation in forest road work .....	.....	.....	Cr. 36,824.40	.....	6,068,679.46
Minor betterments, primary	95,892.70	79,185.18	23,642.94	Cr. 176,179.35	6,147,331.50
Minor betterments, secondary	33,330.40	23,324.05	8,100.85	89,634.18	917,715.94
Minor betterments, county roads .....	.....	.....	.....	86,604.17	86,604.17
Surveys and engineering county work	206,815.35	221,000.20	138,452.02	.....	4,656,333.08
Sub-totals, construction	\$ 6,641,126.43	\$ 4,869,617.09	\$ 931,889.34	Cr. \$ 66,220.48	\$185,937,327.54
Real property negotiation field expense	38,605.36	37,813.08	18,174.33	.....	417,589.24
Purchase of rights of way, quarries, etc.	771,820.74	307,866.09	84,337.82	.....	6,193,198.54
Purchase of parks	26,045.43	25,322.58	13,819.35	.....	692,805.83
Improvements in parks	13,445.35	430.48	.....	21,601.40	269,487.00
Improvements at maintenance stations	43,871.87	5,602.44	2,493.62	40,954.13	615,523.90
Improvements of other properties	24,312.45	16,676.36	11,145.69	.....	427,320.02
Equipment purchases, sales and depreciation (net)	Cr. 60,509.06	Cr. 197,156.68	Cr. 43,665.59	.....	378,933.45
Sub-totals, capital outlays (including construction)	\$ 7,498,718.57	\$ 5,066,171.44	\$ 1,018,194.56	Cr. \$ 3,664.95	\$194,932,185.52

Special maintenance, primary	\$ 377,570.64	\$ 755,582.80	\$ 565,503.44	Cr.\$ 209,900.50	\$ 8,035,101.89
Special maintenance, secondary	90,211.95	81,512.61	14,435.83	200,555.63	603,974.71
Special maintenance, county roads .....	.....	.....	.....	9,344.87	9,344.87
General maintenance, primary	2,793,164.40	2,866,898.50	1,236,417.95	Cr. 1,066,363.72	44,476,902.44
General maintenance, secondary	890,095.56	877,369.77	444,779.33	667,603.03	7,937,169.40
County road maintenance, signs, etc.	63,525.90	41,556.24	8,332.56	372,701.69	549,074.55
City street maintenance (not on state system)	161,735.99	141,962.85	13,546.58	.....	323,424.09
District maintenance superintendence	114,027.41	131,623.75	71,540.51	26,000.00	2,024,383.85
Sub-totals, maintenance	\$ 4,490,331.85	\$ 4,896,506.52	\$ 2,354,556.20	Cr.\$ 59.00	\$ 63,959,375.80
Administration and general supervision	\$ 455,540.22	\$ 431,597.93	\$ 211,230.56	\$ 3,723.95	\$ 7,319,123.51
Planning and traffic surveys	75,263.94	52,307.64	26,760.96	.....	1,025,691.55
Travel and information bureau	36,855.18	12,508.03	13,311.82	.....	690,291.23
Radio communication system	8,866.28	9,429.19	4,711.83	.....	144,292.94
Operation of parks	38,186.59	33,360.48	19,221.72	.....	333,754.68
Operation of maintenance stations, R/W, etc.	81,005.64	83,038.13	46,510.98	.....	442,693.47
Operation of drawbridges and ferries	62,447.25	66,454.55	37,285.33	.....	1,231,391.37
Miscellaneous	220,618.92	361,884.60	36,975.62	.....	2,027,333.59
Sub-totals, operation	\$ 978,784.02	\$ 1,050,580.55	\$ 396,008.82	\$ 3,723.95	\$ 13,214,572.34
Service and clearing accounts	192.09	19,944.80	169,663.66	.....	Cr. 483,947.53
Bond interest and maturities	2,618,790.36	2,470,819.56	1,179,636.67	.....	77,342,919.28
Totals	\$ 15,586,816.89	\$ 13,504,022.87	\$ 5,118,059.91	\$	\$348,965,105.41

Table No. 11

EXPENDITURES FOR PRIMARY HIGHWAY CONSTRUCTION
WORK SUMMARIZED BY HIGHWAYS

From 1917 to June 30, 1944

This table gives the totals of the expenditures made for construction work upon each of the several primary state highways during the 28-year period ending June 30, 1944. It includes expenditures for new construction, additions and betterments, surveys, engineering of county construction and state expenditures in connection with forest highway work.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscel. Contributors
1	Pacific, Jct. City-South ..	\$ 17,510,868.47	\$ 12,150,731.11	\$ 478,720.75	\$ 4,747,780.78	\$ 133,635.83
1E	Pacific, East	10,207,455.79	4,529,685.80	303,766.64	5,237,573.60	136,429.75
1W	Pacific, West	9,528,942.10	4,929,051.27	378,003.88	4,201,808.45	20,078.50
2	Columbia River	16,941,317.02	11,645,339.10	234,159.44	4,914,350.97	147,467.51
3	Oswego	947,442.28	627,532.46	168,309.82	114,100.00	37,500.00
4	The Dalles-California	6,456,957.07	2,588,340.55	1,032,498.39	2,771,348.81	64,769.32
5	John Day	6,099,600.20	3,039,388.01	599,304.42	2,458,907.77	2,000.00
6	Old Oregon Trail	9,540,209.71	4,741,471.15	711,432.92	3,850,473.89	236,831.75
7	Central Oregon	4,079,285.85	2,277,648.97	154,287.80	1,647,349.08	.....
8	Oregon-Washington	1,534,088.49	1,190,826.12	122,649.31	220,613.06	.....
9	Oregon Coast	25,279,303.41	15,219,326.61	2,044,814.63	7,968,797.66	46,364.51
10	Wallowa Lake	2,395,652.18	1,194,822.22	542,380.21	653,369.75	5,080.00
11	Enterprise-Lewiston	380,400.35	308,778.86	71,621.49	.....	.....
12	Baker-Homestead	1,220,007.35	530,903.16	500,609.18	133,716.83	54,778.18
13	Baker-Unity	785,456.77	442,943.78	331,113.14	11,399.85	.....
14	Crooked River	451,698.06	353,197.08	98,500.98	.....	.....
15	McKenzie	2,056,684.63	995,541.06	427,755.02	618,179.76	15,208.79
16	Santiam	2,186,538.63	1,314,153.15	232,885.28	599,835.96	39,664.24
17	McKenzie-Bend	90,954.40	85,445.20	5,509.20	.....	.....
18	Willamette	2,051,750.15	891,376.72	311,897.95	848,475.48	.....
19	Fremont	1,933,916.47	856,938.62	190,273.36	886,704.49	.....
20	Klamath Falls-Lakeview	2,417,785.50	1,758,099.85	265,269.22	390,639.65	3,776.78
21	Green Springs	2,097,705.79	1,074,526.37	557,877.85	438,529.42	26,772.15
22	Crater Lake	2,461,925.18	1,403,531.27	177,121.60	381,272.31	.....
23	Dairy-Bonanza	121,915.97	87,052.17	34,863.80	.....	.....
24	Burns-Crane	377,303.14	173,140.93	48,156.79	156,005.42	.....
25	Redwood	962,972.19	631,334.42	54,507.82	277,129.95	.....
26	Mt. Hood	2,396,138.86	1,676,079.15	505,287.08	214,772.63	.....
27	Alsea	1,387,764.40	1,058,662.44	278,757.08	50,344.88	.....
28	Pendleton-John Day	1,826,758.35	911,238.16	162,236.66	753,031.10	252.43
29	Tualatin Valley	2,208,629.66	1,562,923.71	177,813.38	455,193.64	12,698.93
30	Salem-Dallas	991,634.28	466,976.15	295,472.12	229,186.01	.....

Table 11—Continued

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscel. Contributors
31	Albany-Corvallis	581,737.65	114,959.22	130,101.15	299,593.00	37,084.28
32	Three Rivers	597,203.20	516,912.77	21,646.19	58,644.24	.....
33	Corvallis-Newport	1,753,939.44	1,198,574.48	269,729.35	277,015.35	8,620.26
34	Siuslaw	1,681,958.61	1,162,304.65	476,293.56	43,360.40	.....
35	Coos Bay-Roseburg	1,900,084.99	991,471.58	649,440.43	243,072.98	16,100.00
36	Pendleton-Cold Springs ..	437,583.15	166,109.89	191,239.44	80,233.82	.....
37	Wilson River	1,786,390.66	1,230,651.37	.....	555,739.29	.....
38	Oregon Caves	474,813.41	460,813.41	14,000.00	.....	.....
39	Salmon River	1,421,610.06	1,098,612.01	58,106.99	264,891.06	.....
40	Beaverton-Hillsdale	276,344.17	139,091.20	61,252.97	76,000.00	.....
41	Ochoco	2,266,654.59	1,281,141.34	173,593.13	809,420.12	2,500.00
42	Sherman	1,395,423.60	476,436.96	360,879.73	556,309.12	1,747.79
43	Monmouth-Independence ..	69,004.69	69,004.69	.....	.....	.....
44	Wapinitia	779,429.84	487,929.82	.....	291,500.02	.....
45	Umpqua	1,664,379.65	309,428.10	366,174.97	988,776.58	.....
46	Necanicum	651,838.80	342,980.19	148,986.77	159,871.84	.....
47	Wolf Creek	4,178,407.82	2,251,788.43	92,000.00	1,834,619.39	.....
48	John Day-Burns	163,683.52	163,683.52	.....	.....	.....
49	Lakeview-Burns	588,156.26	340,111.55	31,604.06	216,440.65	.....
50	Klamath Falls-Malin	764,671.35	492,217.00	77,816.14	177,600.37	17,037.34
51	West Portland-Hubbard ..	451,015.60	129,062.60	.....	321,953.00	.....
52	Heppner	1,252,796.92	935,970.74	315,066.35	.....	1,759.83
53	Warm Springs	803,507.62	267,214.62	.....	536,293.00	.....
54	Boardman-Stanfield	584,528.75	249,694.87	.....	334,833.88	.....
55	Halfway	1,325.80	1,325.80	.....	.....	.....
	Flight Strips	1,127,028.88	61,669.88	.....	1,065,359.00	.....
	Undistributed, Co. General	60,243.11	24,634.25	35,608.86	.....	.....
	Undistributed, Entire St.	5,607.61	5,607.61	.....	.....	.....
	Totals	\$166,648,432.45	\$ 95,686,458.17	\$14,971,397.30	\$54,922,418.31	\$ 1,068,158.67
	Primary maintenance	54,253,739.27	54,000,142.24	84,302.28	167,400.19	1,894.56
	Secondary construction ..	12,797,599.28	7,957,635.92	426,015.94	4,413,292.08	655.34
	Secondary maintenance ..	8,821,597.32	8,805,258.89	2,418.41	13,920.02	.....
	County road construction	6,491,295.81	3,223,888.61	338,669.77	2,910,289.82	18,447.61
	County road maintenance	884,039.21	882,328.21	1,643.53	67.47	.....
	General purposes	99,068,402.07	98,587,624.28	26,709.26	454,068.53	.....
	Grand totals	\$348,965,105.41	\$269,143,336.32	\$15,851,156.49	\$62,881,456.42	\$ 1,089,156.18

Table No. 12
EXPENDITURES FOR PRIMARY HIGHWAY MAINTENANCE WORK
SUMMARIZED BY HIGHWAYS

From 1917 to June 30, 1944

Kinds of expenditures are same as included in Table No. 14

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscel. Contributors
1	Pacific, Jct. City-South	\$ 2,562,958.13	\$ 2,551,312.43	\$ 11,645.70	\$	\$
1E	Pacific, East	1,656,618.52	1,654,117.10	2,501.42		
1W	Pacific, West	1,060,029.57	1,053,831.64	6,197.93		
2	Columbia River	4,536,015.76	4,521,694.00	12,556.40	870.80	894.56
3	Oswego	141,166.94	141,166.94			
4	The Dalles-California	3,574,650.24	3,560,818.96	769.57	13,061.71	
5	John Day	2,369,687.16	2,364,629.17	5,057.99		
6	Old Oregon Trail	4,595,629.82	4,551,889.46	1,228.14	42,512.22	
7	Central Oregon	1,171,301.96	1,167,586.18	15.45	3,700.33	
8	Oregon-Washington	507,232.21	501,880.75	5,351.46		
9	Oregon Coast	5,887,199.84	5,850,866.57	4,501.67	30,831.60	1,000.00
10	Wallowa Lake	1,372,488.75	1,372,488.75			
11	Enterprise-Lewiston	166,506.91	166,506.91			
12	Baker-Homestead	341,938.26	341,742.10	196.16		
13	Baker-Unity	309,615.59	309,615.59			
14	Crooked River	99,194.49	99,194.49			
15	McKenzie	1,150,644.68	1,139,345.17		11,299.51	
16	Santiam	920,205.35	912,661.19		7,544.16	
17	McKenzie-Bend	199,942.68	196,286.78		3,655.90	
18	Willamette	673,476.97	673,476.97			
19	Fremont	712,068.62	698,976.79		13,091.83	
20	Klamath Falls-Lakeview	909,121.15	907,471.73		1,649.42	
21	Green Springs	1,076,320.13	1,076,119.36	200.77		
22	Crater Lake	976,036.46	975,693.79		342.67	
23	Dairy-Bonanza	62,062.44	62,062.44			
24	Burns-Crane	127,698.73	127,602.26	96.47		
25	Redwood	384,906.86	384,906.86			
26	Mt. Hood	1,470,990.61	1,464,869.93		6,120.68	
27	Alsea	757,331.06	757,331.06			
28	Pendleton-John Day	941,138.73	941,138.73			
29	Tualatin Valley	386,474.27	376,481.06	9,993.21		
30	Salem-Dallas	288,852.38	288,799.43	52.95		
31	Albany-Corvallis	76,733.12	75,933.12	800.00		
32	Three Rivers	849,661.51	832,724.06	16,937.45	2,270.29	
33	Corvallis-Newport	1,159,296.09	1,156,705.30	320.50	2,270.29	
34	Siuslaw	738,054.74	726,562.43		11,492.31	
35	Coos Bay-Roseburg	1,724,928.74	1,714,032.46	3,838.17	7,058.11	
36	Pendleton-Cold Springs	138,578.01	138,578.01			
37	Wilson River	403,344.11	403,344.11			
38	Oregon Caves	105,965.78	105,965.78			
39	Salmon River	706,385.76	706,084.84	300.92		
40	Beaverton-Hillsdale	54,040.44	52,300.49	1,739.95		
41	Ochoco	973,807.33	973,807.33			
42	Sherman	667,228.02	659,920.86		7,307.16	
43	Monmouth-Independence	29,656.29	29,656.29			
44	Wapinitia	438,668.19	438,668.19			
45	Umpqua	421,572.82	421,572.82			
46	Necanicum	455,866.95	455,866.95			
47	Wolf Creek	553,508.57	553,508.57			
48	John Day-Burns	248,485.04	248,485.04			
49	Lakeview-Burns	217,934.76	217,934.76			
50	Klamath Falls-Malin	367,789.15	367,789.15			
51	West Portland-Hubbard	4,201.37	4,201.37			
52	Heppner	553,154.19	548,562.70		4,591.49	
53	Warm Springs	35,842.49	35,842.49			
54	Boardman-Stanfield	8,084.76	8,084.76			
55	Halfway	43,723.91	43,723.91			
	Undistributable to highways	145,823.19	145,823.19			
	Maintenance supervision	1,741,898.67	1,741,898.67			
	Totals	\$54,253,739.27	\$54,000,142.24	\$ 84,302.28	\$167,400.19	\$ 1,894.56

Table No. 13

EXPENDITURES FOR PRIMARY HIGHWAY CONSTRUCTION WORK
SUMMARIZED BY COUNTIES

From 1917 to June 30, 1944

Kinds of expenditures same as included in Table No. 11

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscal. Contributors
Baker	\$ 5,445,962.64	\$ 2,609,030.17	\$ 1,007,557.69	\$ 1,740,377.99	\$ 88,986.79
Benton	3,266,901.83	2,095,782.99	372,439.94	790,058.64	8,620.26
Clackamas	5,437,246.00	2,839,637.02	482,535.78	1,975,066.14	140,007.06
Clatsop	7,835,958.85	4,214,512.55	448,340.54	3,173,105.76	.....
Columbia	2,849,766.96	2,387,404.51	12,060.23	448,599.59	1,702.33
Coos	6,481,452.48	3,976,588.16	821,548.46	1,657,641.59	25,674.27
Crook	1,385,338.16	853,840.13	198,071.21	300,926.82	2,500.00
Curry	4,783,902.94	3,219,290.60	227,542.72	1,337,069.62	.....
Deschutes	2,568,088.40	1,328,164.52	152,817.14	1,067,153.28	19,953.46
Douglas	11,719,600.95	7,542,101.25	1,213,134.95	2,929,896.23	34,468.52
Gilliam	2,640,395.03	1,591,371.69	266,278.07	780,745.27	2,000.00
Grant	3,750,326.99	1,940,912.52	188,600.65	1,620,813.82	.....
Harney	2,557,294.92	1,105,666.29	128,701.27	1,322,927.36	.....
Hood River	2,884,555.94	2,438,357.00	283,001.46	128,735.96	34,461.52
Jackson	7,627,558.04	4,190,793.74	523,074.48	2,870,267.64	43,422.18
Jefferson	1,306,612.90	585,251.35	138,482.18	582,139.37	740.00
Josephine	4,426,704.28	3,408,552.73	110,077.78	908,073.77	.....
Klamath	6,800,625.78	3,442,772.75	696,293.23	2,589,809.69	71,750.11
Lake	2,957,181.68	1,655,062.57	233,414.80	1,068,704.31	.....
Lane	10,729,614.51	5,572,798.57	1,784,732.06	3,277,427.69	94,656.19
Lincoln	7,130,351.89	4,871,289.15	215,573.57	2,042,742.20	746.97
Linn	4,607,764.07	2,510,111.07	451,737.03	1,540,104.96	105,811.01
Malheur	3,958,159.93	2,254,123.05	256,725.86	1,417,311.02	30,000.00
Marion	3,295,156.34	1,232,895.79	238,133.29	1,823,056.81	1,070.45
Morrow	1,557,153.99	1,081,594.95	317,758.89	156,040.32	1,759.33
Multnomah	7,589,302.50	3,943,633.17	62,825.83	3,495,696.60	87,146.90
Polk	3,410,542.88	1,923,268.12	155,023.89	1,330,861.77	1,389.10
Sherman	1,701,007.93	714,019.80	273,903.11	711,337.23	1,747.79
Tillamook	5,576,683.57	3,503,050.99	511,286.51	1,526,302.80	36,043.27
Umatilla	6,517,195.24	3,494,133.27	641,760.35	2,354,740.41	26,561.21
Union	3,737,942.49	2,170,826.55	602,607.02	799,187.76	165,321.16
Wallowa	1,457,335.48	740,383.00	361,995.78	354,956.70	.....
Wasco	6,201,148.78	3,080,491.69	868,761.50	2,241,665.93	10,229.36
Washington	4,835,859.48	3,518,250.93	100,412.78	1,205,941.98	11,253.79
Wheeler	2,553,608.88	1,385,879.95	189,078.49	978,650.44	.....
Yamhill	3,931,493.23	2,167,338.09	435,108.76	1,308,911.84	20,134.54
Flight Strips	1,127,028.88	61,669.88	.....	1,065,359.00	.....
Undistributed	5,607.61	5,607.61	.....	.....	.....
Totals	\$166,648,432.45	\$ 95,686,458.17	\$14,971,397.30	\$54,922,418.31	\$ 1,068,158.67
Primary maintenance	54,253,739.27	54,000,142.24	84,302.28	167,400.19	1,894.56
Secondary construction	12,797,599.28	7,957,635.92	426,015.94	4,413,292.08	655.34
Secondary maintenance	8,821,597.32	8,805,258.89	2,418.41	13,920.02	.....
County road construction	6,491,295.81	3,223,888.61	338,669.77	2,910,289.82	18,447.61
County road maintenance	884,039.21	882,328.21	1,643.53	67.47	.....
General purposes	99,068,402.07	98,587,624.28	26,709.26	454,068.53	.....
Grand totals	\$348,965,105.41	\$269,143,336.32	\$15,851,156.49	\$62,881,456.42	\$ 1,069,156.18

Table No. 14

EXPENDITURES FOR PRIMARY HIGHWAY MAINTENANCE WORK
SUMMARIZED BY COUNTIES

From 1917 to June 30, 1944

This table gives the totals of the expenditures made for primary highway maintenance work in each of the several counties during the 28-year period ending June 30, 1944. It includes all expenditures for special maintenance and general maintenance.

County	Total Amount Expended	Co-operation in Expenditures			
		By State	By County	By Federal Government	By Miscel. Contributors
Baker	\$ 2,103,976.47	\$ 2,103,780.31	\$ 196.16	\$	\$
Benton	1,451,361.94	1,451,046.13	315.81	.....	.....
Clackamas	1,347,044.88	1,346,803.91	240.97	.....	.....
Clatsop	1,614,605.90	1,604,915.23	8,796.11	.....	894.56
Columbia	708,201.51	708,201.51	.....	.....	.....
Coos	2,422,549.70	2,385,239.22	6,728.62	30,581.86	.....
Crook	649,170.78	649,170.78	.....	.....	.....
Curry	1,494,979.83	1,490,601.97	205.18	4,172.68	.....
Deschutes	1,536,562.76	1,524,316.41	240.10	12,006.26	.....
Douglas	2,575,377.66	2,571,236.83	4,140.83	.....	.....
Gilliam	1,156,057.49	1,153,758.35	2,299.14	.....	.....
Grant	1,298,373.73	1,295,943.56	2,430.17	.....	.....
Harney	781,297.77	781,185.85	111.92	.....	.....
Hood River	1,306,502.23	1,300,381.55	.....	6,120.68	.....
Jackson	2,109,548.76	2,105,001.43	4,547.33	.....	.....
Jefferson	600,879.21	595,058.29	.....	5,820.92	.....
Josephine	837,257.78	835,616.19	1,641.59	.....	.....
Klamath	3,428,955.56	3,421,323.58	48.52	7,583.46	.....
Lake	1,100,563.21	1,085,821.96	.....	14,741.25	.....
Lane	2,732,310.63	2,710,874.65	1,899.06	19,536.92	.....
Lincoln	1,842,383.00	1,836,657.04	320.50	5,405.46	.....
Linn	1,272,533.95	1,263,917.21	2,467.70	6,149.04	.....
Malheur	1,499,788.73	1,499,328.97	459.76	.....	.....
Marion	597,878.84	597,668.43	210.41	.....	.....
Morrow	998,188.36	990,620.14	2,976.73	4,591.49	.....
Multnomah	1,181,751.03	1,181,751.03	.....	.....	.....
Polk	814,880.47	814,281.40	599.07	.....	.....
Sherman	774,192.11	766,884.95	.....	7,307.16	.....
Tillamook	2,002,355.20	1,992,575.61	8,779.59	.....	1,000.00
Umatilla	2,858,381.16	2,809,328.64	5,669.50	43,383.02	.....
Union	1,950,893.08	1,950,378.39	514.69	.....	.....
Wallowa	831,674.26	831,674.26	.....	.....	.....
Wasco	1,909,341.55	1,908,564.94	776.61	.....	.....
Washington	632,977.57	621,436.82	11,540.75	.....	.....
Wheeler	824,767.80	823,074.08	1,693.72	.....	.....
Yamhill	1,118,452.50	1,104,000.76	14,451.74	.....	.....
Supervision	1,741,898.67	1,741,898.67	.....	.....	.....
Undistributed ..	145,823.19	145,823.19	.....	.....	.....
Totals	\$54,253,739.27	\$54,000,142.24	\$ 84,302.28	\$ 167,400.19	\$ 1,894.56

Table No. 15

EXPENDITURES FOR SECONDARY STATE HIGHWAY CONSTRUCTION WORK SUMMARIZED BY COUNTIES

From 1932 to June 30, 1944

This table gives the totals of the expenditures made for secondary highway construction work in each of the several counties during the 13-year period ending June 30, 1944. It includes expenditures for new construction, additions and betterments, surveys, engineering county construction and state expenditures in connection with forest road work.

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscel. Contributors
Baker	\$ 111,791.40	\$ 106,598.40	\$	\$ 5,193.00	\$
Benton	342,900.65	250,965.99	2,350.00	89,584.66	.....
Clackamas	675,392.89	420,108.34	47,825.95	207,458.60	.....
Clatsop	248,871.43	153,244.56	9,070.98	86,555.89	.....
Columbia	366,677.05	221,878.87	.....	144,798.18	.....
Coos	649,886.96	323,505.11	2,000.00	324,381.85	.....
Crook	275,897.56	192,490.27	34,411.29	48,996.00	.....
Curry	33,233.16	12,809.56	.....	20,423.60	.....
Deschutes	232,905.24	196,660.05	36,245.19	.....	.....
Douglas	278,063.36	262,573.55	.....	15,489.81	.....
Gilliam	156,875.39	113,855.67	.....	43,019.72	.....
Grant	142,904.40	46,990.65	9,086.75	86,827.00	.....
Harney	163,661.82	140,465.22	23,196.60	.....	.....
Hood River	215,228.63	153,085.95	.....	62,142.68	.....
Jackson	708,986.29	588,798.67	.....	120,187.62	.....
Jefferson	49,904.57	34,204.57	.....	15,700.00	.....
Josephine	193,853.09	54,762.48	.....	139,090.61	.....
Klamath	339,820.97	64,050.64	70,558.62	205,211.71	.....
Lake	90,729.09	82,427.64	.....	8,301.45	.....
Lane	717,760.39	477,604.09	59,856.49	179,644.47	655.34
Lincoln	337,567.61	275,431.71	.....	62,135.90	.....
Linn	433,452.48	303,772.72	23,000.00	106,679.76	.....
Malheur	1,316,952.73	625,319.70	.....	691,633.03	.....
Marion	603,682.57	370,441.40	.....	233,241.17	.....
Morrow	322,610.05	182,709.38	.....	139,900.67	.....
Multnomah	969,221.10	425,815.48	.....	543,405.62	.....
Polk	436,567.92	158,816.15	.....	277,751.77	.....
Sherman	45,455.43	45,455.43	.....	.....	.....
Tillamook	142,492.60	120,533.81	.....	21,958.79	.....
Umatilla	898,848.53	671,082.88	92,939.72	134,825.93	.....
Union	350,240.39	264,762.39	.....	85,478.00	.....
Wallowa	103,161.61	34,409.71	.....	68,751.90	.....
Wasco	68,913.82	63,452.39	5,461.43	.....	.....
Washington	389,987.43	205,249.09	.....	184,738.34	.....
Wheeler	56,137.11	40,191.11	5,000.00	10,946.00	.....
Yamhill	326,963.56	273,112.29	5,012.92	48,838.35	.....
Undistributed .....	.....	.....	.....	.....	.....
Totals	\$12,797,599.28	\$7,957,635.92	\$ 426,015.94	\$4,413,292.08	\$655.34

Table No. 16

EXPENDITURES FOR SECONDARY HIGHWAY MAINTENANCE WORK SUMMARIZED BY COUNTIES

From 1932 to June 30, 1944

This table gives the totals of the expenditures made for secondary highway maintenance work in each of the several counties during the 13-year period ending June 30, 1944. It includes expenditures for special maintenance and general maintenance.

County	Total Amount Expended	Cooperation in Expenditures		
		By State	By County	By Federal Government
Baker	\$ 199,982.69	\$ 199,948.96	\$ 33.73	\$
Benton	139,223.44	139,223.44	.....	.....
Clackamas	600,152.76	600,152.76	.....	.....
Clatsop	332,394.93	326,477.68	.....	5,917.25
Columbia	278,769.04	278,769.04	.....	.....
Coos	416,966.63	416,966.63	.....	.....
Crook	135,716.71	135,716.71	.....	.....
Curry	10,209.38	10,209.38	.....	.....
Deschutes	215,781.05	215,781.05	.....	.....
Douglas	287,451.16	287,451.16	.....	.....
Gilliam	46,182.38	46,182.38	.....	.....
Grant	51,196.06	51,196.06	.....	.....
Harney	110,162.38	110,162.38	.....	.....
Hood River	79,742.83	79,742.83	.....	.....
Jackson	351,590.37	346,777.25	275.14	4,537.98
Jefferson	17,421.49	17,421.49	.....	.....
Josephine	118,729.92	117,277.95	.....	1,451.97
Klamath	476,990.56	476,990.56	.....	.....
Lake	66,043.71	66,043.71	.....	.....
Lane	599,490.36	599,382.36	108.00	.....
Lincoln	213,151.72	213,151.72	.....	.....
Linn	390,244.39	390,244.39	.....	.....
Malheur	315,113.58	315,113.58	.....	.....
Marion	389,713.88	389,713.88	.....	.....
Morrow	145,642.02	145,642.02	.....	.....
Multnomah	68,032.47	68,032.47	.....	.....
Polk	420,487.65	420,487.65	.....	.....
Sherman	51,652.56	51,652.56	.....	.....
Tillamook	67,466.83	67,466.83	.....	.....
Umatilla	643,403.31	639,388.95	2,001.54	2,012.82
Union	244,418.27	244,418.27	.....	.....
Wallowa	87,537.50	87,537.50	.....	.....
Wasco	37,821.32	37,821.32	.....	.....
Washington	457,637.77	457,637.77	.....	.....
Wheeler	102,177.28	102,177.28	.....	.....
Yamhill	372,609.44	372,609.44	.....	.....
Maintenance Supervision	280,289.48	280,289.48	.....	.....
Totals	\$8,821,597.32	\$8,805,258.89	\$ 2,418.41	\$ 13,920.02

Table No. 17

EXPENDITURES FOR COUNTY ROAD CONSTRUCTION WORK
SUMMARIZED BY COUNTIES

To June 30, 1944

This table gives the totals of the expenditures made for construction of highways, and city streets, that are not on the state highway system to June 30, 1944. It includes expenditures for new construction, surveys, engineering county construction, and state expenditures in connection with forest highway work.

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscel. Contributors
Baker	\$ 138,887.70	\$ 90,596.10	\$ 14,091.98	\$ 34,199.62	\$
Benton	153,483.72	137,591.72	.....	15,892.00	.....
Clackamas	317,783.95	200,916.60	24,102.11	92,528.35	236.89
Clatsop	145,206.33	107,373.54	132.79	37,700.00	.....
Columbia	43,324.41	8,335.05	116.36	34,873.00	.....
Coos	201,720.36	43,433.36	.....	158,287.00	.....
Crook .....	.....	.....	.....	.....	.....
Curry	1,346.44	1,346.44	.....	.....	.....
Deschutes	183,079.01	130,511.44	15,551.57	36,366.00	650.00
Douglas	347,253.70	243,128.69	7,295.68	96,829.33	.....
Gilliam	7,936.65	.....	7,936.65	.....	.....
Grant .....	.....	.....	.....	.....	.....
Harney .....	.....	.....	.....	.....	.....
Hood River	324.09	324.09	.....	.....	.....
Jackson	286,601.63	95,824.23	10,878.40	179,899.00	.....
Jefferson	26,980.74	16,825.52	3,800.00	6,355.22	.....
Josephine	64,752.10	52,678.10	.....	12,074.00	.....
Klamath	333,180.51	147,048.93	15,575.07	167,535.13	3,021.38
Lake	118,703.17	47,760.63	23,287.43	46,629.43	1,025.68
Lane	203,077.94	172,261.93	22,536.52	6,582.83	1,696.66
Lincoln	5,206.30	3,869.23	.....	1,337.07	.....
Linn	150,115.93	66,536.72	44,081.21	39,498.00	.....
Malheur	65,281.51	24,544.93	13,996.58	26,740.00	.....
Marion	490,423.30	363,077.17	22,600.20	104,745.93	.....
Morrow	2,515.77	2,515.77	.....	.....	.....
Multnomah	1,435,170.42	423,583.66	5,701.90	994,067.86	11,817.00
Polk	332,393.48	57,751.68	2,104.80	272,537.00	.....
Sherman	154,969.55	77,681.63	419.50	76,868.42	.....
Tillamook	195,074.84	86,612.60	33,426.77	75,035.47	.....
Umatilla	74,930.01	67,316.51	7,018.70	594.80	.....
Union	90,111.73	39,821.85	.....	50,289.88	.....
Wallowa	98,442.20	44,616.60	10,770.60	43,055.00	.....
Wasco	187,649.39	100,808.55	21,933.27	64,907.57	.....
Washington	379,635.19	227,179.19	14,322.79	138,133.21	.....
Wheeler	23,486.88	13,380.88	.....	10,106.00	.....
Yamhill	232,246.86	128,635.27	16,988.89	86,622.70	.....
Totals	\$6,491,295.81	\$3,223,888.61	\$ 338,669.77	\$2,910,289.82	\$ 18,447.61

Table No. 18

EXPENDITURES FOR COUNTY ROAD AND CITY STREET
MAINTENANCE WORK SUMMARIZED BY COUNTIES

To June 30, 1944

This table gives the total expenditures for maintenance work on highways and city streets that are not on the state highway system. It includes expenditures for maintenance of county road signs, prior maintenance of sections of state highways which have been abandoned, and maintenance of city streets.

County	Total Amount Expended	Cooperation in Expenditures		
		By State	By County	By Federal Government
Baker	\$114,909.56	\$114,349.67	\$ 559.89	\$
Benton	21,400.87	21,400.87	.....	.....
Clackamas	31,546.27	31,546.27	.....	.....
Clatsop	24,066.46	24,066.46	.....	.....
Columbia	8,966.71	8,966.71	.....	.....
Coos	18,844.70	18,844.70	.....	.....
Crook	1,636.79	1,636.79	.....	.....
Curry	1,061.31	1,061.31	.....	.....
Deschutes	10,280.91	10,280.91	.....	.....
Douglas	29,781.00	29,138.61	642.39	.....
Gilliam	1,579.87	1,579.87	.....	.....
Grant	3,364.50	3,364.50	.....	.....
Harney	1,901.42	1,901.42	.....	.....
Hood River	6,832.56	6,832.56	.....	.....
Jackson	92,100.85	92,100.85	.....	.....
Jefferson	917.27	917.27	.....	.....
Josephine	28,541.54	28,541.54	.....	.....
Klamath	80,070.62	80,070.62	.....	.....
Lake	11,396.34	11,396.34	.....	.....
Lane	47,528.32	47,528.32	.....	.....
Lincoln	4,439.43	4,439.43	.....	.....
Linn	63,180.17	62,767.41	412.76	.....
Malheur	6,727.01	6,727.01	.....	.....
Marion	62,845.67	62,845.67	.....	.....
Morrow	3,106.10	3,106.10	.....	.....
Multnomah	45,686.78	45,686.78	.....	.....
Polk	56,349.58	56,349.58	.....	.....
Sherman	1,757.82	1,757.82	.....	.....
Tillamook	7,435.21	7,435.21	.....	.....
Umatilla	42,834.15	42,738.19	28.49	67.47
Union	8,617.02	8,617.02	.....	.....
Wallowa	3,517.53	3,517.53	.....	.....
Wasco	8,132.94	8,132.94	.....	.....
Washington	17,550.33	17,550.33	.....	.....
Wheeler	708.76	708.76	.....	.....
Yamhill	12,227.14	12,227.14	.....	.....
Undistributed	2,195.70	2,195.70	.....	.....
Totals	\$884,039.21	\$882,328.21	\$ 1,643.53	\$ 67.47

Table No. 19

FOREST HIGHWAY EXPENDITURES ON STATE HIGHWAY
ROUTES CLASSIFIED BY COUNTIES

Years 1917 to 1943, Inclusive

In this table are given the expenditures that have been made in connection with forest highway construction work on the state highway system. This work was supervised by the United States Public Roads Administration, and the amounts of Federal Government expenditures and county expenditures here shown are as reported by that bureau. The state expenditures shown are also included in the foregoing tables Nos. 11, 15 and 17, but the Federal Government and county expenditures are not included in those tables. For a classification of these expenditures by highways see table No. 20.

County	Total Amount Expended	Cooperation in Expenditures		
		By State	By County	By Federal Government
Baker	\$ 186,958.91	\$ 44,995.09	\$ 584.00	\$ 141,379.82
Clackamas	1,102,277.40	533,880.22		568,397.18
Coos	231,790.61		83,000.00	148,790.61
Crook	126,044.62	39,634.17	26,875.00	59,535.45
Curry	459,770.44	116,289.11	30,000.00	313,481.33
Deschutes	332,117.75	149,046.57	5,000.00	178,071.18
Douglas	1,421,127.60	314,053.51	336,637.90	770,436.19
Grant	2,064,703.44	159,490.25	250,046.25	1,655,166.94
Harney	406,575.63		65,000.00	341,575.63
Hood River	740,419.22	303,993.94		436,425.28
Jackson	1,170,785.47	296,095.20	3,438.81	871,251.46
Jefferson	272,267.00	56,000.00	13,000.00	203,267.00
Josephine	504,894.27	294,433.59	17,522.99	192,937.69
Klamath	836,900.06	228,598.60	172,454.97	435,846.49
Lake	977,140.17	211,482.27		765,657.90
Lane	5,751,098.26	1,106,616.47	724,547.45	3,919,934.34
Lincoln	2,794,164.62	884,418.77	315,000.00	1,594,745.85
Linn	2,389,863.33		* 202,014.00	2,187,849.33
Marion	486,946.35		173,586.00	313,360.35
Morrow	140,057.14		75,000.00	65,057.14
Multnomah	276,762.92	41,150.00		235,612.92
Tillamook	1,062,434.76	333,387.67	18,624.69	710,422.40
Umatilla	893,404.87	155,287.23	145,718.32	592,399.32
Union	392,199.86			392,199.86
Wallowa	559,559.47	67,951.65	39,210.35	452,397.47
Wasco	531,470.60	169,289.06	25,000.00	337,181.54
Wheeler	563,343.01	105,060.12	29,900.00	428,382.89
Totals	\$26,675,077.78	\$ 5,611,153.49	\$ 2,752,160.73	\$18,311,763.56

* Includes \$34,014.00 Marion County expenditures on North Santiam Highway.

Table No. 20

FOREST HIGHWAY EXPENDITURES ON STATE HIGHWAY ROUTES CLASSIFIED BY HIGHWAYS

Years 1917 to 1943, Inclusive

In this table are given the expenditures that have been made in connection with forest highway construction work on the state highway system. This work was supervised by the United States Public Roads Administration, and the amounts of Federal Government Expenditures and county expenditures here shown are as reported by that bureau. The state expenditures shown are also included in the foregoing tables Nos. 11, 15 and 17, but the Federal Government and county expenditures are not included in those tables. For a classification of these expenditures by counties see table no 19.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures		
			By State	By County	By Federal Government
1	Pacific, Junction City-South	\$ 309,776.86	\$ 182,776.86	\$ 23,000.00	\$ 104,000.00
2	Columbia River	512,233.38	92,500.00	.....	419,733.38
4	The Dalles-California	648,426.73	178,806.28	149,592.81	320,027.64
5	John Day	725,794.69	174,485.34	162,110.76	389,198.59
9	Oregon Coast	3,076,144.08	806,752.01	495,163.36	1,774,228.71
11	Enterprise-Lewiston	439,597.55	67,951.65	39,210.35	332,435.55
15	McKenzie	898,606.12	429,278.06	20,000.00	449,328.06
16	Santiam	1,877,729.47	56,000.00	131,000.00	1,690,729.47
18	Willamette	2,352,534.37	171,501.74	61,998.26	2,119,034.37
19	Fremont	259,273.28	879.37	.....	258,393.91
20	Klamath Falls-Lakeview	806,302.56	226,919.50	.....	579,383.06
22	Crater Lake	691,412.57	301,060.92	26,300.97	364,050.68
25	Redwood	194,160.63	130,121.32	9,522.99	54,516.32
26	Mt. Hood	1,262,804.15	577,227.85	.....	685,576.30
27	Alsea	1,019,452.70	410,818.40	165,000.00	443,634.30
28	Pendleton-John Day	1,342,095.95	185,287.23	202,218.32	954,590.40
32	Three Rivers	423,943.55	149,528.51	18,624.69	255,790.35
34	Siuslaw	1,962,790.55	500,833.19	467,688.75	994,268.61
38	Oregon Caves	310,733.64	164,312.27	8,000.00	138,421.37
39	Salmon River	1,034,305.79	180,000.00	.....	854,305.79
41	Ochoco	362,169.84	144,694.29	31,775.00	185,700.55
44	Wapinitia	737,299.22	270,585.37	25,000.00	441,713.85
45	Umpqua	323,273.90	.....	128,001.65	195,272.25
48	John Day-Burns	1,292,568.29	.....	97,019.49	1,195,548.80
53	Warm Springs	30,593.39	.....	.....	30,593.39
162	North Santiam	1,295,317.04	.....	257,600.00	1,037,717.04
181	Siletz	147,786.45	.....	30,000.00	117,786.45
230	Tiller-Trail	1,009,146.94	58,333.33	103,333.33	847,480.28
321	Heppner-Spray	467,274.93	.....	100,000.00	367,274.93
330	Weston-Elgin	583,383.78	.....	.....	583,383.78
350	Little Sheep Creek	119,961.92	.....	.....	119,961.92
421	Klamath Lake	7,683.46	.....	.....	7,683.46
.....	Timberline (State share only)	108,000.00	108,000.00	.....	.....
.....	Cascade Lakes (St. share only)	42,500.00	42,500.00	.....	.....
	Totals	\$26,675,077.78	\$5,611,153.49	\$2,752,160.73	\$18,311,763.56

Table No. 21

STATISTICS PERTAINING TO FOREST HIGHWAY WORK ON
STATE HIGHWAYS

The statistics here given apply to highway work in the State of Oregon performed under the supervision of the Public Roads Administration. All of the work included is upon state highways at points where these highways are in or adjacent to National Forests. The work is financed under cooperative agreements between the federal government, the state and the counties of the state, the federal funds being Oregon's proportionate share of funds annually appropriated by Congress for forest road work.

The amounts of county and federal government expenditures here given, and the mileages of work performed, are as reported by the Public Roads Administration. The amounts of state expenditures are as shown by the disbursement records of the State Highway Commission.

EXPENDITURES ON FOREST HIGHWAY WORK

Year	Expenditures			
	State Funds	County Funds	Government Funds	Total
1918-1919-1920	\$ 809,261.58	\$ 102,271.45	\$ 656,708.64	\$ 1,568,241.67
1921-1922	724,970.53	67,142.21	836,765.18	1,628,877.92
1923-1924	1,092,660.31	823,942.05	1,908,176.76	3,824,779.12
1925-1926	759,762.58	261,961.69	742,498.02	1,764,222.29
1927	147,859.76	105,611.36	325,542.44	579,013.56
1928	103,084.09	54,543.79	257,246.68	414,874.56
1929	82,000.00	32,000.00	421,609.32	535,609.32
1930	696,986.98	100,000.00	422,052.47	1,219,039.45
1931	653,385.58	215,000.00	1,693,234.06	2,561,619.64
1932	34,430.75	192,743.64	552,166.73	779,341.12
1933	87,217.99	*325,302.11	*1,801,604.45	*2,214,124.55
1934	28,416.93	Cr. 6,000.00	1,364,551.40	1,386,968.33
1935	Cr. 32,547.32	†282,206.16	†2,119,647.22	†2,369,306.06
1936	124,030.12	80,969.88	937,098.13	1,142,098.13
1937	93,409.12	19,090.88	1,425,661.42	1,538,161.42
1938	Cr. 114,275.51	95,375.51	942,818.01	923,918.01
1939	35,000.00	.....	864,218.71	899,218.71
1940 .....	.....	.....	578,318.91	578,318.91
1941	285,500.00	.....	143,157.68	428,657.68
1942 .....	.....	.....	251,316.23	251,316.23
1943 .....	.....	.....	67,371.10	67,371.10
Totals	\$ 5,611,153.49	\$ 2,752,160.73	\$ 18,311,763.56	\$ 26,675,077.78

* Includes prior expenditures on John Day-Burns Highway, which highway was taken into primary system in 1933.

† Includes prior expenditures on Secondary Highways which have been taken into the Forest Road Table during 1935.

Table No. 21—Continued

MILEAGES OF WORK COMPLETED ON FOREST
HIGHWAY PROJECTS

Year	Concrete Paving (Miles)	Grading (Miles)	Rock Surfacing (Miles)	Oiled Surface (Miles)	Bituminous Macadam (Miles)
1918	4.30	.....	.....	.....
1919	62.90	.....	.....	.....
1920	56.10	22.59	.....	.....
1921	20.68	38.24	.....	.....
1922	15.69	22.37	.....	.....
1923	61.00	87.92	.....	.....
1924	153.37	74.62	.....	.....
1925	50.70	99.94	.....	.....
1926	52.32	41.41	.....	.....
1927	39.80	53.50	.....	.....
1928	23.80	17.60	.....	.....
1929	19.00	6.00	.....	.....
1930	30.35	25.88	.....	.....
1931	61.29	21.35	.....	.....
1932	14.61	28.36	.....	.....
1933	28.33	74.31	.....	24.94
1934	19.65	18.08	53.51	24.65
1935	8.38	.....	30.71	.....
1936	41.84	43.59	.....	.....
1937	0.18	17.85	41.73	23.22	37.26
1938	23.04	23.31	7.10	8.36
1939	8.55	37.78	20.69	16.89
1940	25.00	46.41	40.34	6.07
1941
1942	13.03	16.72	3.87	5.21
1943	5.24	12.87	.....	5.24
Totals	0.18	856.82	854.58	179.44	128.62

Table No. 22

COUNTY DISBURSEMENTS FOR ROAD PURPOSES

1939 to 1943, Inclusive

County	1939	1940	1941	1942	1943
Baker	\$ 122,300.75	\$ 76,322.27	\$ 91,503.61	\$ 32,087.12	\$ 25,081.13
Benton	90,051.08	104,439.05	100,801.97	74,468.12	72,013.73
Clackamas	290,678.93	207,770.92	242,870.61	*195,000.00	*185,000.00
Clatsop	140,446.83	163,435.19	209,355.94	82,871.55	68,034.09
Columbia	114,316.50	128,614.00	130,481.95	138,549.76	130,337.11
Coos	233,445.77	205,588.80	206,364.42	169,421.54	120,912.36
Crook	32,051.93	34,749.45	*35,000.00	18,665.61	28,855.11
Curry	11,010.67	15,553.90	19,494.90	26,300.93	15,121.12
Deschutes	45,196.17	48,102.88	46,847.11	17,323.00	21,170.00
Douglas	178,249.39	188,252.66	211,844.03	234,366.37	257,029.75
Gilliam	25,260.57	32,656.13	34,178.39	33,842.71	19,283.26
Grant	44,429.56	54,385.60	61,075.80	39,892.08	24,612.60
Harney	33,571.69	41,797.07	46,031.29	42,095.34	34,088.06
Hood River	56,549.32	52,783.43	51,839.54	50,918.31	49,673.44
Jackson	187,029.74	195,314.33	236,886.32	137,154.96	139,250.87
Jefferson	5,614.46	11,027.15	12,436.49	12,624.89	16,398.82
Josephine	66,768.26	69,895.87	75,351.76	68,088.63	66,398.44
Klamath	118,489.03	119,745.08	164,666.29	*130,000.00	*130,000.00
Lake	54,919.48	51,843.96	39,973.14	*50,000.00	*50,000.00
Lane	298,949.34	405,703.31	427,449.15	390,114.45	410,910.17
Lincoln	49,052.51	76,002.27	70,814.16	*35,000.00	35,740.25
Linn	356,482.74	402,895.09	425,746.26	226,129.96	269,492.68
Malheur	62,011.20	72,338.01	18,183.38	28,181.26	20,265.35
Marion	312,907.78	342,503.05	281,906.68	*200,000.00	*200,000.00
Morrow	61,506.00	65,691.23	66,084.31	47,095.32	33,224.81
Multnomah	766,632.89	724,342.32	831,526.31	754,275.32	835,286.02
Polk	106,703.35	112,373.08	120,578.14	123,963.23	133,839.74
Sherman	27,048.65	30,750.00	32,325.00	28,644.14	25,130.91
Tillamook	108,858.54	*110,000.00	*110,000.00	96,721.19	106,163.26
Umatilla	155,800.91	153,820.00	180,350.34	146,543.01	150,336.12
Union	132,022.67	167,208.10	161,555.60	80,672.43	72,866.86
Wallowa	63,115.55	49,929.87	72,423.23	65,088.86	41,511.73
Wasco	120,191.24	104,776.81	103,504.13	60,398.71	67,937.87
Washington	241,486.19	258,049.41	288,120.88	251,669.11	234,379.22
Wheeler	10,083.83	6,761.67	14,546.63	*10,000.00	*10,000.00
Yamhill	123,468.16	151,852.63	197,358.14	118,308.68	167,043.62
Totals	\$4,846,701.68	\$5,037,274.59	\$5,419,475.90	\$4,216,476.59	\$4,267,388.50

* These are estimated expenditures, as no reports were received from the counties.

Table No. 23

COUNTY BOND AND WARRANT INDEBTEDNESS IN
CONNECTION WITH ROADS AND BRIDGES

July 1, 1944

The information contained in this table was compiled by the State Treasurer.

County	Bonds Outstanding	Road Warrants Outstanding	Total Road and Bridge Debt	Sinking Fund	Net Road and Bridge Debt
Baker	\$ 500,000.00	\$	\$ 500,000.00	\$ 464,684.10	\$ 35,315.90
Benton	28,000.00	.....	28,000.00	18,260.00	9,740.00
Clackamas	250,000.00	.....	250,000.00	.....	250,000.00
Clatsop .....	.....	.....	.....	.....	.....
Columbia .....	.....	.....	.....	.....	.....
Coos	464,000.00	.....	464,000.00	464,000.00	.....
Crook	42,000.00	.....	42,000.00	21,126.05	20,873.95
Curry	37,000.00	.....	37,000.00	37,000.00	.....
Deschutes .....	.....	.....	.....	.....	.....
Douglas .....	.....	.....	.....	.....	.....
Gilliam	67,000.00	.....	67,000.00	67,000.00	.....
Grant	215,000.00	.....	215,000.00	33,383.52	181,616.48
Harney	20,000.00	.....	20,000.00	2,391.91	17,608.09
Hood River .....	.....	.....	.....	.....	.....
Jackson	8,000.00	.....	8,000.00	8,000.00	.....
Jefferson .....	.....	.....	.....	.....	.....
Josephine .....	.....	.....	.....	.....	.....
Klamath	278,700.00	.....	278,700.00	146,571.95	132,128.05
Lake .....	.....	.....	.....	.....	.....
Lane	175,000.00	.....	175,000.00	61,608.54	113,391.46
Lincoln .....	.....	.....	.....	.....	.....
Linn .....	.....	.....	.....	.....	.....
Malheur .....	.....	.....	.....	.....	.....
Marion .....	.....	.....	.....	.....	.....
Morrow	241,500.00	.....	241,500.00	36,142.88	205,357.12
Multnomah	7,731,500.00	.....	7,731,500.00	1,536,004.15	6,195,495.85
Polk .....	.....	.....	.....	.....	.....
Sherman .....	.....	.....	.....	.....	.....
Tillamook .....	.....	.....	.....	.....	.....
Umatilla .....	.....	.....	.....	.....	.....
Union .....	.....	.....	.....	.....	.....
Wallowa .....	.....	.....	.....	.....	.....
Wasco .....	.....	.....	.....	.....	.....
Washington .....	.....	.....	.....	.....	.....
Wheeler	99,000.00	.....	99,000.00	31,514.57	67,485.43
Yamhill .....	.....	.....	.....	.....	.....
Totals	\$10,156,700.00	\$	\$10,156,700.00	\$2,927,687.67	\$7,229,012.33

Table No. 24
 APPORTIONMENT TO COUNTIES OF MOTOR VEHICLE FEES
 1920 to 1944, Inclusive

Prior to 1917, the total net revenues from motor vehicle license fees were reverted to the counties; from 1917 to 1919, inclusive, the entire net fees were reverted to the state highway fund; from 1920 to January 1, 1930, inclusive, one-quarter of the net fees were apportioned to the counties, and three-quarters to the state highway fund; and from January 1, 1930, to June 30, 1933, one-third of the net fees were apportioned to the counties and two-thirds to the state highway fund. The net revenues from motor transportation fees, from the beginning of the act authorizing the collection of such fees in 1927, to June 30, 1933, were apportioned one-quarter to the counties and three-quarters to the state highway fund. Subsequent to June 30, 1933, the entire net revenues from both sources were deposited into the state highway fund. During the four-year period from 1933 to 1936, the counties received \$1,600,000 yearly. Subsequent to 1936, the yearly apportionment has been increased to 15.7 per cent of the total net state highway income, but to be not less than \$2,000,000.

County	Direct Apportionment 1920 to 1933		Apportionment From Highway Fund 1933 to 1944		
	Motor Vehicle Fees	Motor Trans- portation Fees	\$1,600,000 Yearly 1933 to 1936	15.7% of Total Highway Income 1937 to 1944	Total Appor- tionment From Highway Fund
Baker	\$ 271,754.78	\$ 6,663.10	\$ 93,638.00	\$ 268,167.49	\$ 361,805.49
Benton	331,147.52	7,987.50	117,842.04	349,357.00	458,199.04
Clackamas	781,725.30	17,959.23	278,809.32	882,537.45	1,161,346.77
Clatsop	381,029.53	8,228.79	127,276.44	385,429.90	512,706.34
Columbia	287,812.38	7,134.75	105,411.28	322,451.45	427,862.73
Coos	493,068.89	11,845.18	173,731.72	511,842.07	685,573.79
Crook	61,877.70	1,479.01	19,236.08	81,362.33	100,598.41
Curry	55,264.62	1,387.94	21,634.16	66,801.20	88,435.36
Deschutes	292,763.81	7,227.86	97,901.56	314,805.36	412,706.92
Douglas	418,357.19	9,973.09	142,054.40	422,829.66	564,884.06
Gilliam	76,368.30	1,672.68	21,404.16	56,794.17	78,198.33
Grant	82,504.63	2,387.80	34,797.88	109,549.02	144,346.90
Harney	75,715.98	2,497.05	34,515.00	96,203.29	130,718.29
Hood River	214,944.28	4,855.61	71,699.00	202,934.92	274,633.92
Jackson	670,552.49	16,941.41	252,936.96	713,817.30	966,754.26
Jefferson	40,510.97	928.18	12,348.36	36,567.33	48,915.69
Josephine	215,424.40	5,742.57	80,790.32	270,832.15	351,622.47
Klamath	533,146.70	16,532.94	231,038.12	732,114.56	963,152.68
Lake	87,509.63	2,510.80	35,220.00	117,048.37	152,268.37
Lane	949,858.11	23,323.29	340,195.88	1,142,034.03	1,482,229.91
Lincoln	119,949.78	3,513.73	50,258.88	193,733.29	243,992.17
Linn	480,864.10	10,543.08	160,688.80	536,432.35	697,121.15
Malheur	159,267.93	4,852.82	67,642.48	261,107.94	328,750.42
Marion	1,164,524.17	26,736.54	413,578.68	1,274,418.36	1,687,997.04
Morrow	95,094.79	2,171.69	29,518.60	82,544.57	112,063.17
Multnomah	6,838,588.80	159,298.75	2,414,251.52	6,264,759.31	8,679,010.83
Polk	285,457.90	6,519.86	99,625.96	283,077.18	382,703.14
Sherman	85,064.85	1,539.46	20,321.28	54,568.87	74,890.15
Tillamook	234,090.63	5,476.32	80,694.48	227,934.47	308,628.95
Umatilla	541,729.19	11,874.48	176,309.44	516,642.79	692,952.23
Union	307,007.47	7,487.59	110,955.96	300,665.46	411,621.42
Wallowa	114,583.55	2,664.43	33,905.68	109,514.94	143,420.62
Wasco	271,209.65	6,052.11	90,653.76	260,490.26	330,703.02
Washington	567,299.56	12,856.13	195,407.96	645,883.41	841,291.37
Wheeler	41,761.62	1,162.79	15,690.96	47,466.04	63,157.00
Yamhill	426,137.42	9,784.23	148,014.88	461,652.63	609,667.51
Totals	\$18,053,968.62	\$ 429,812.79	\$ 6,400,000.00	*\$18,574,929.92	\$24,974,929.92

* Includes the July and December, 1944, apportionments.

Table No. 25

MILEAGES OF PRIMARY STATE HIGHWAYS

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.	Highway	Total Mileage of Highway	Miles of Different Types of Improvement					
			Concrete Pavement	Bitu- minous Pavement	Bitu- minous Macadam	Oiled Surfacing	Unolled Surfacing	Graded Only
1	Pacific	228.30	74.42	133.31	20.30	0.27		
1E	Pacific, East	113.07	50.67	53.49	8.91			
1W	Pacific, West	116.07	54.92	51.78	29.37			
2	Columbia River	315.81	25.65	166.94	72.27	50.95		
3	Oswego	11.55	7.53	4.02				
4	The Dalles-California	298.29	2.42	5.74	44.61	245.52		
5	John Day	282.96			39.53	215.33	28.10	
6	Old Oregon Trail	238.64	2.74	6.95	169.96	58.99		
7	Central Oregon	258.59	0.04	0.27	58.94	199.34		
8	Oregon-Washington	35.85		8.07	27.78			
9	Oregon Coast	383.72	32.68	30.35	114.61	203.90		2.18
10	Wallowa Lake	71.95	0.24	2.95	12.50	56.26		
11	Enterprise-Lewiston	45.28		0.04		0.36	35.44	8.59
12	Baker-Homestead	81.06		0.33		46.52	3.90	2.47
13	Baker-Unity	46.41		0.42		9.04	15.92	21.03
14	Crooked River	42.48				0.13		42.35
15	McKenzie	111.55	0.25	0.46	33.25	77.59		
16	Santiam	100.76		8.19	36.91	40.08	10.30	5.28
17	McKenzie-Bend	20.07				20.07		
18	Willamette	86.65			4.11	82.54		
19	Fremont	157.71			51.13	106.58		
20	Klamath Falls- Lakeview	95.84	3.82	1.26	42.37	42.35	6.04	
21	Green Springs	59.08		5.69	33.86	19.53		
22	Crater Lake	74.32	8.88	0.14	44.50	20.80		
23	Dairy-Bonanza	7.02				7.02		
24	Burns-Crane	28.89		0.04		0.35	28.50	
25	Redwood	42.51	0.11		10.83	31.57		
26	Mt. Hood	102.27	11.53	13.71	34.00	43.03		
27	Alsea	59.11			3.19	35.32	20.60	
28	Pendleton-John Day	122.03		1.61	30.10	80.13	3.41	6.78
29	Tualatin Valley	42.28	20.18	22.10				
30	Salem-Dallas	15.53	0.16	9.52	5.85			
31	Albany-Corvallis	11.12	10.26	0.86				
32	Three Rivers	24.74			4.41	20.33		
33	Corvallis-Newport	56.90	0.57		27.67	28.66		
34	Siuslaw	67.45			15.98	51.47		
35	Coos Bay-Roseburg	61.81	0.11	0.31	9.01	52.38		
36	Pendleton-Cold Springs	30.54			5.22	24.81	0.51	
37	Wilson River	54.32	1.70	0.48	15.21	24.11		12.82
38	Oregon Caves	19.70				19.70		
39	Salmon River	45.08	7.25	5.45	32.38			
40	Beaverton-Hillsdale	6.72	4.10	2.62				
41	Ochoco	104.08			1.55	65.32	37.21	
42	Sherman	68.85			15.86	52.99		
43	Monmouth- Independence	2.37		2.37				
44	Wapinitia	40.00		1.00	23.03	15.97		
45	Umpqua	50.13	0.59		33.52	16.02		
46	Necanicum	22.11			9.24	12.87		
47	Wolf Creek	74.83	3.61	0.73	28.46	20.07		21.96
48	John Day-Burns	67.05			18.63	18.02	30.40	
49	Lakeview-Burns	90.10				90.10		
50	Klamath Falls-Malin	27.14	0.10		18.14	8.90		
51	West Portland- Hubbard	17.16	4.07			0.04	2.73	0.26
52	Heppner	84.37				63.13	21.24	
53	Warm Springs	46.43				14.52		18.25
54	Boardman-Stanfield	25.52			25.52			13.65
55	Halfway	11.15				11.15		
Totals		4,805.32	328.60	521.20	1,212.71	2,304.13	244.30	98.23
								96.15

Table No. 25

MILEAGES OF PRIMARY STATE HIGHWAYS

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.	Highway	Total Mileage of Highway	Miles of Different Types of Improvement						Unim- proved
			Concrete Pavement	Bitu- minous Pavement	Bitu- minous Macadam	Oiled Surfacing	Unolled Surfacing	Graded Only	
1	Pacific	228.30	74.42	133.31	20.30	0.27	—	—	—
1E	Pacific, East	113.07	50.67	53.49	8.91	—	—	—	—
1W	Pacific, West	116.07	54.92	31.78	29.37	—	—	—	—
2	Columbia River	315.81	25.65	166.94	72.27	50.95	—	—	—
3	Oswego	11.55	7.53	4.02	—	—	—	—	—
4	The Dalles-California	298.29	2.42	5.74	44.61	245.52	—	—	—
5	John Day	282.96	—	—	39.53	215.33	28.10	—	—
6	Old Oregon Trail	238.64	2.74	6.95	169.96	58.99	—	—	—
7	Central Oregon	258.59	0.04	0.27	58.94	199.34	—	—	—
8	Oregon-Washington	35.85	—	6.07	27.78	—	—	—	—
9	Oregon Coast	385.72	32.68	30.35	114.61	203.90	—	—	2.18
10	Wallowa Lake	71.95	0.24	2.95	12.50	56.26	—	—	—
11	Enterprise-Lewiston	45.28	—	0.04	—	0.36	35.44	8.59	0.85
12	Baker-Homestead	81.06	—	0.33	—	46.52	3.90	2.47	27.84
13	Baker-Unity	46.41	—	0.42	—	9.04	15.92	21.03	—
14	Crooked River	42.48	—	—	—	0.13	—	42.35	—
15	McKenzie	111.55	0.25	0.46	33.25	77.59	—	—	—
16	Santiam	100.76	—	8.19	36.91	40.08	10.30	5.28	—
17	McKenzie-Bend	20.07	—	—	—	20.07	—	—	—
18	Willamette	86.65	—	—	4.11	82.54	—	—	—
19	Fremont	157.71	—	—	51.13	106.58	—	—	—
20	Klamath Falls- Lakeview	95.84	3.82	1.26	42.37	42.35	6.04	—	—
21	Green Springs	59.08	—	5.69	33.86	19.53	—	—	—
22	Crater Lake	74.32	8.88	0.14	44.50	20.80	—	—	—
23	Dairy-Bonanza	7.02	—	—	—	7.02	—	—	—
24	Burns-Crane	28.89	—	0.04	—	0.35	28.50	—	—
25	Redwood	42.51	0.11	—	10.83	31.57	—	—	—
26	Mt. Hood	102.27	11.53	13.71	34.00	43.03	—	—	—
27	Alsea	59.11	—	—	3.19	35.32	20.60	—	—
28	Pendleton-John Day	122.03	—	1.61	30.10	80.13	3.41	—	6.78
29	Tualatin Valley	42.28	20.18	22.10	—	—	—	—	—
30	Salem-Dallas	15.53	0.16	9.52	5.85	—	—	—	—
31	Albany-Corvallis	11.12	10.26	0.86	—	—	—	—	—
32	Three Rivers	24.74	—	—	4.41	20.33	—	—	—
33	Corvallis-Newport	56.90	0.57	—	27.67	28.66	—	—	—
34	Siuslaw	67.45	—	—	15.98	51.47	—	—	—
35	Coos Bay-Roseburg	61.81	0.11	0.31	9.01	52.38	—	—	—
36	Pendleton-Cold Springs	30.54	—	—	5.22	24.81	0.51	—	—
37	Wilson River	54.32	1.70	0.48	15.21	24.11	—	—	12.82
38	Oregon Caves	19.70	—	—	—	19.70	—	—	—
39	Salmon River	45.08	7.25	5.45	32.38	—	—	—	—
40	Beaverton-Hillsdale	6.72	4.10	2.62	—	—	—	—	—
41	Ochoco	104.08	—	—	1.55	65.32	37.21	—	—
42	Sherman	68.85	—	—	15.86	52.99	—	—	—
43	Monmouth- Independence	2.37	—	2.37	—	—	—	—	—
44	Wapinitia	40.00	—	1.00	23.03	15.97	—	—	—
45	Umpqua	50.13	0.59	—	33.52	16.02	—	—	—
46	Necanicum	22.11	—	—	9.24	12.87	—	—	—
47	Wolf Creek	74.83	3.61	0.73	28.46	20.07	—	—	21.96
48	John Day-Burns	67.05	—	—	18.63	18.02	30.40	—	—
49	Lakeview-Burns	90.10	—	—	—	90.10	—	—	—
50	Klamath Falls-Malin	27.14	0.10	—	18.14	8.90	—	—	—
51	West Portland- Hubbard	17.16	4.07	—	—	0.04	2.73	0.26	10.06
52	Heppner	84.37	—	—	—	63.13	21.24	—	—
53	Warm Springs	46.43	—	—	—	14.52	—	18.25	13.65
54	Boardman-Stanfield	25.52	—	—	25.52	—	—	—	—
55	Halfway	11.15	—	—	—	11.15	—	—	—
Totals		4,805.32	328.60	521.20	1,212.71	2,304.13	244.30	98.23	96.15

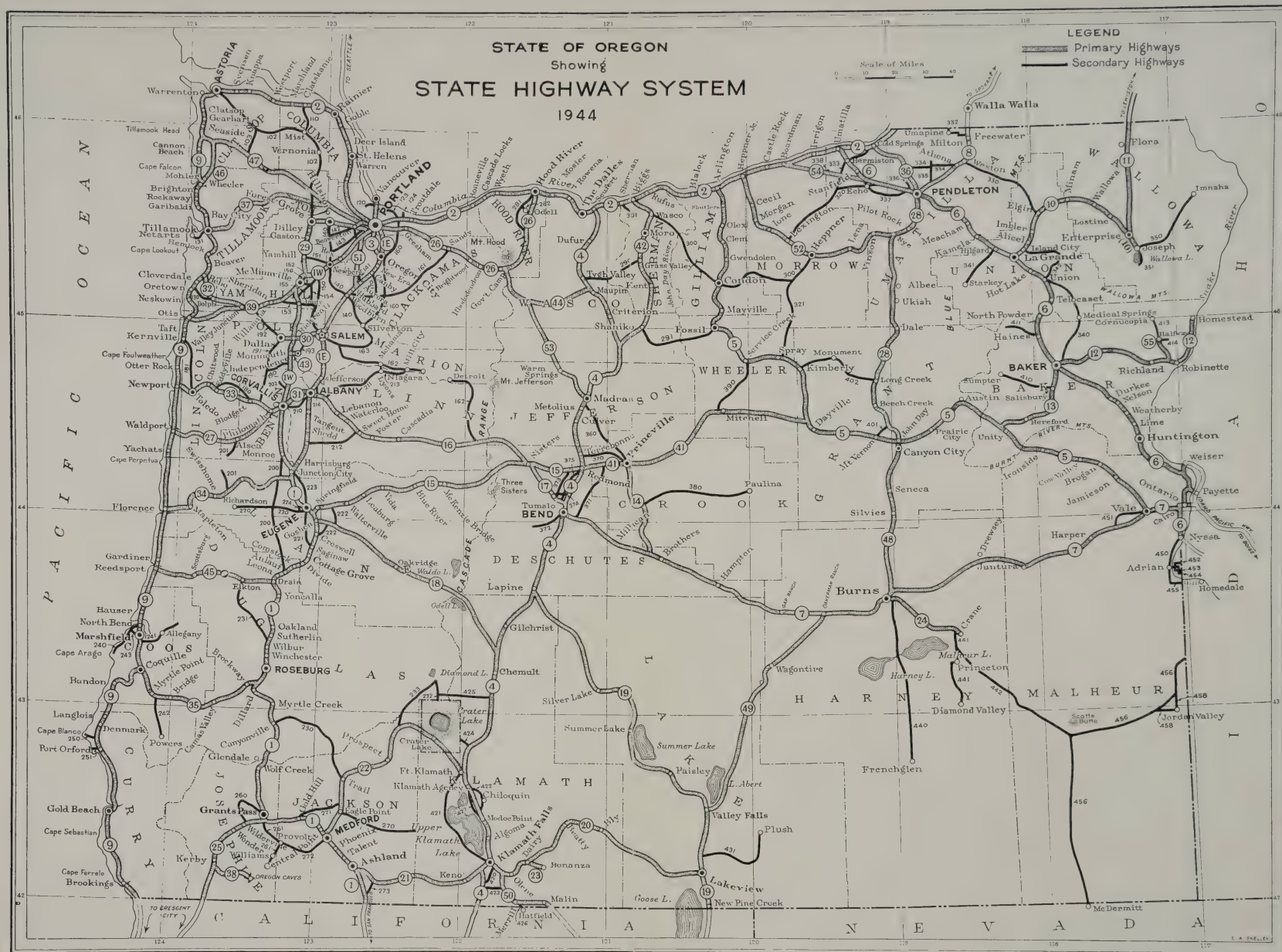


Table No. 26

MILEAGES OF PRIMARY STATE HIGHWAYS BY COUNTIES

The mileages given in this table are inclusive of mileage within cities and towns.

County	Total Mileage in County	Miles of Different Types of Improvement						
		Concrete Pavement	Bitu- minous Pavement	Bitu- minous Macadam	Oiled Surfacing	Unoiled Surfacing	Graded Only	Unim- proved
Baker	230.84	0.98	1.66	57.51	87.33	32.02	23.50	27.84
Benton	93.41	17.85	11.21	23.37	40.98	.....	.....	.....
Clackamas	78.62	32.29	1.49	36.94	2.90	.....	.....	5.00
Clatsop	109.39	16.54	34.75	31.77	26.33	.....	.....	.....
Columbia	56.21	3.90	51.50	.....	0.81	.....	.....	.....
Coos	102.46	21.75	2.07	24.96	53.68	.....	.....	.....
Crook	82.86	.....	.....	1.55	29.81	13.22	38.28	.....
Curry	90.12	0.37	.....	12.15	77.60	.....	.....	.....
Deschutes	204.28	0.52	3.45	47.35	148.89	.....	4.07	.....
Douglas	199.98	30.78	69.08	35.10	65.02	.....	.....	.....
Gilliam	97.21	0.05	.....	14.91	82.25	.....	.....	.....
Grant	199.43	.....	.....	21.86	146.71	24.08	.....	6.78
Harney	185.55	.....	0.04	49.49	88.57	47.45	.....	.....
Hood River	69.44	0.53	25.41	3.37	40.13	.....	.....	.....
Jackson	148.03	18.93	36.27	68.71	24.12	.....	.....	.....
Jefferson	71.33	.....	.....	4.74	59.95	.....	3.83	2.81
Josephine	95.24	6.34	20.52	16.84	51.54	.....	.....	.....
Klamath	301.41	5.86	3.82	105.14	186.59	.....	.....	.....
Lake	244.39	.....	.....	51.13	187.22	6.04	.....	.....
Lane	286.27	33.91	16.86	55.67	179.83	.....	.....	.....
Lincoln	137.90	1.23	.....	69.87	46.20	20.60	.....	.....
Linn	117.10	14.17	21.07	31.93	34.35	10.30	5.28	.....
Malheur	182.42	1.60	1.39	60.01	112.74	6.68	.....	.....
Marion	47.73	15.69	32.00	.....	0.04	.....	.....	.....
Morrow	107.44	.....	.....	15.52	81.13	10.79	.....	.....
Multnomah	119.07	32.16	83.14	3.24	.....	.....	.....	0.53
Polk	57.90	5.68	18.34	32.77	1.11	.....	.....	.....
Sherman	63.92	0.04	.....	30.69	33.19	.....	.....	.....
Tillamook	132.45	6.97	11.27	57.01	55.02	.....	.....	2.18
Umatilla	246.70	0.16	11.62	144.55	79.41	10.96	.....	.....
Union	84.49	0.24	4.70	37.93	41.62	.....	.....	.....
Wallowa	83.71	.....	1.00	7.72	30.11	35.44	8.59	0.85
Wasco	190.17	.....	20.00	37.82	107.08	.....	14.42	10.85
Washington	107.23	16.13	26.14	16.79	5.87	2.73	0.26	39.31
Wheeler	107.26	.....	.....	.....	83.27	23.99	.....	.....
Yamhill	73.36	43.93	12.40	4.30	12.73	.....	.....	.....
Totals	4,805.32	328.60	521.20	1,212.71	2,304.13	244.30	98.23	96.15

Table No. 27

MILEAGES OF SECONDARY HIGHWAYS BY COUNTIES

The mileages given in this table are inclusive of mileages within cities and towns.

County	Total Mileage in County	Miles of Different Types of Improvement						
		Concrete Pavement	Bitu- minous Pavement	Bitu- minous Macadam	Oiled Surfacing	Un-oiled Surfacing	Graded Only	Unim- proved
Baker	70.29	.....	.....	.....	20.20	46.16	.....	3.93
Benton	31.85	.....	0.13	.....	11.84	19.88	.....	.....
Clackamas	89.71	3.89	17.82	4.85	56.49	6.51	.....	0.15
Clatsop	43.58	10.41	3.85	0.98	22.48	.....	.....	5.33
Columbia	42.04	.....	0.78	5.22	32.71	3.33	.....	.....
Coos	55.28	1.08	0.94	.....	37.15	10.91	.....	5.20
Crook	81.45	.....	.....	.....	.40	59.43	21.62	.....
Curry	6.33	.....	.....	.....	.....	5.29	.....	1.04
Deschutes	53.41	.....	0.56	.....	24.76	3.84	24.25	.....
Douglas	98.72	.....	0.10	.....	41.99	56.63	.....	.....
Gilliam	42.34	.....	0.14	.....	15.36	9.95	5.78	11.11
Grant	41.20	.....	.....	.....	5.35	26.24	2.56	7.05
Harney	122.48	.....	.....	.....	.....	23.25	49.33	49.90
Hood River	21.65	3.78	0.31	0.86	11.97	4.73	.....	.....
Jackson	97.63	.....	17.15	.....	64.28	.....	0.23	15.97
Jefferson	19.37	.....	.....	.....	.....	8.16	6.50	4.71
Josephine	46.13	.....	1.05	.....	30.43	14.65	.....	.....
Klamath	106.78	.....	0.61	18.06	34.10	16.61	7.00	30.40
Lake	46.21	.....	.....	.....	.....	21.42	13.72	11.07
Lane	141.68	1.83	13.85	8.42	13.47	93.90	.....	10.21
Lincoln	44.31	.....	.....	5.55	7.78	30.98	.....	.....
Linn	86.53	0.04	6.31	.....	66.18	14.00	.....	.....
Malheur	208.37	.....	.....	.....	138.62	26.73	.....	43.02
Marion	126.70	0.25	65.89	.....	48.99	.....	0.43	11.14
Morrow	74.44	.....	.....	.....	37.78	24.90	6.92	4.84
Multnomah	16.78	6.97	9.31	.....	0.50	.....	.....	.....
Polk	57.59	0.06	3.75	.....	42.33	11.45	.....	.....
Sherman	40.57	.....	.....	.....	.....	26.48	4.23	9.86
Tillamook	18.55	1.56	0.10	.....	7.49	3.94	3.02	2.44
Umatilla	117.90	0.05	0.29	2.64	101.64	13.28	.....	.....
Union	81.79	.....	.....	.....	56.79	19.48	2.60	2.92
Wallowa	36.88	.....	.....	.....	6.16	8.08	22.64	.....
Wasco	31.98	.....	.....	.....	.....	22.70	5.48	3.80
Washington	67.94	0.35	1.54	7.17	49.22	9.66	.....	.....
Wheeler	61.28	.....	.....	.....	0.60	35.12	3.06	22.50
Yamhill	66.73	9.71	3.70	.....	50.34	2.98	.....	.....
Totals	2,396.47	39.98	148.18	53.75	1,037.40	680.67	179.37	257.12

Table No. 28

MILEAGES OF SECONDARY STATE HIGHWAYS

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.	Highway	Total Mileage of Highway	Miles of Different Types of Improvement						
			Concrete Pavement	Bitu- minous Pavement	Bitu- minous Macadam	Oiled Surfacing	Unoled Surfacing	Graded Only	Unim- proved
102	Nehalem	85.39	10.41	5.39	13.37	52.89	3.33		
103	Fishhawk Falls	5.86							5.86
110	Mist-Clatskanie	11.90				11.90			
120	Swift	2.94	2.09	0.85					
122	Vancouver Avenue	0.50	0.50						
123	Northeast Portland	5.10	4.17	0.93					
124	Sun Dial	1.25		1.25					
130	Little Nestucca	9.40					3.94	3.02	2.44
131	Netarts	9.15	1.56	0.10		7.49			
140	Hillsboro-Silverton	52.19	0.35	32.22		11.73	7.89		
141	Beaverton-Aurora	20.81	0.39	5.42		14.85			0.15
142	Farmington	9.89				5.14	4.75		
143	Scholls	12.40				12.40			
150	Salem-Dayton	20.10	0.03			20.07			
151	Yamhill-Newberg	11.65	0.80	0.58		10.27			
152	Three Mile Lane	8.46	7.83	0.63					
153	Bellevue-Hopewell	14.89				14.89			
154	Lafayette	5.75				5.75			
155	Amity-Dayton	7.03				7.03			
156	McMinnville	1.80	1.05	0.75					
160	Cascade	44.61	3.12	19.50		21.99			
161	Woodburn-Sandy	46.67	0.62	7.42	4.85	27.27	6.51		
162	North Santiam	65.43		15.46		38.40		0.43	11.14
163	Silver Creek Falls	40.82		12.49		28.33			
170	Canby-Marquam	8.02	0.22			7.80			
180	Eddyville-Blodgett	18.92					18.92		
181	Siletz	31.86			5.55	7.78	18.53		
190	Kings Valley	25.43				19.18	6.25		
191	Dallas-Kings Valley	10.81		0.43		5.18	5.20		
192	Dallas-Coast	15.19				15.19			
193	Independence	6.38	0.06	3.32		3.00			
200	Territorial	45.99			3.33	2.09	40.57		
201	Alsea-Deadwood	27.40					27.40		
202	Tampico-Lewisville	5.46					5.46		
210	Corvallis-East Side	10.19		0.28		9.91			
211	Albany-Lyons	24.68	0.04	6.16		4.48	14.00		
212	Halsey-Sweet Home	21.51				21.51			
213	Mehama-Mill City	8.83				8.83			
214	Albany Airport	1.07				1.07			
220	Richardson-Eugene	38.29		1.03	5.09	6.98	23.86		1.33
221	Fox Hollow	15.50	1.13				5.87		8.50
222	Springfield-Creswell	15.52				6.42	9.10		
223	Junction City-Eugene	13.52	0.70	12.82					
224	W. 7th St.-W. 11th St.	0.38							0.38
230	Tiller-Trail	50.03				28.51	21.52		
231	Elkton-Sutherlin	30.26		0.10			30.16		
232	Crater Lake-North	5.29				5.29			
233	West Diamond Lake	23.89				23.89			
240	Cape Arago	14.25	0.34	0.22		10.57	3.12		
241	Coos River	18.86	0.59			5.33	7.74		5.20
242	Powers	18.62	0.15			18.42	0.05		
243	Empire-Marshfield	3.55		0.72		2.83			
250	Cape Blanco	5.54					4.50		1.04
251	Port Orford	0.79					0.79		
260	Rogue River Loop	23.00		1.05		7.30	14.65		
261	Williams	23.13				23.13			
270	Little Butte	30.33				14.13		0.23	15.97
271	Sams Valley	17.25				17.25			
272	Medford-Provolt	25.42		9.54		15.88			
273	Siskiyou	7.61		7.61					
281	Hood River	18.14	2.96	0.31	0.86	11.21	2.80		

Table No. 28—Continued

MILEAGES OF SECONDARY STATE HIGHWAYS

Hwy. No.	Highway	Total Mileage of Highway	Miles of Different Types of Improvement						
			Concrete Pavement	Bitu- minous Pavement	Bitu- minous Macadam	Oiled Surfacing	Un-oiled Surfacing	Graded Only	Unim- proved
282	Odell	3.51	0.82			0.76	1.93		
290	Shearars Bridge	28.97					20.94	4.23	3.80
291	Shaniko-Fossil	43.65				0.60	22.99	7.78	12.28
300	Wasco-Heppner	90.58		0.14		33.08	18.85	12.70	25.61
301	Fulton Canyon-Wasco	1.50					1.50		
320	Lexington-Echo	39.56				39.56			
321	Heppner-Spray	41.00					41.00		
330	Weston-Elgin	41.39		0.10		41.29			
332	Sunnyside-Umapine	7.25				7.25			
333	Hermiston	17.79			0.87	16.92			
334	Athens-Holdman	16.44		0.19		2.97	13.28		
335	Havana-Helix	8.90	0.05			8.85			
336	Pendleton Airport	1.36			1.36				
337	Stanfield-Pendleton	24.65				24.65			
338	Ordinance Depot	0.41			0.41				
340	Medical Springs	42.67				42.34	0.33		
341	Starkey	17.00					11.48	2.60	2.92
342	Cove	22.16				14.49	7.67		
350	Little Sheep Creek	30.42					7.78	22.64	
351	Joseph-Wallowa Lake	6.46				6.16	0.30		
360	Madras-Prineville	30.07				0.40	14.94	10.02	4.71
370	O'Neil	17.81					17.81		
371	Powell Butte	17.92					7.70	10.22	
372	Century Drive	11.79		0.56		11.23			
373	Cline Falls	10.13						10.13	
374	Tumalo-Deschutes	3.90						3.90	
375	Redmond-Bend	13.53				13.53			
380	Paulina	49.08					30.98	18.10	
390	Service Cr.-Mitchell	24.85					13.87	0.76	10.22
401	Beech Creek	5.35				5.35			
402	Kimberly-Long Creek	35.85					26.24	2.56	7.05
410	Sumpter Valley	22.62					19.59		3.03
411	Haynes-Anthony	12.60					11.70		0.90
413	Halfway-Cornucopia	11.52				0.37	11.15		
414	Pine Creek	3.72					3.72		
420	Midland	5.61			2.14		3.47		
421	Klamath Lake	49.70		0.61	0.81	5.29	8.59	7.00	27.40
422	Chiloquin	10.88			10.88				
423	Lower Klamath	7.55					4.55		3.00
424	Sand Creek	4.23			4.23				
425	E. Diamond Lake	14.72				14.72			
426	Hatfield	2.51				2.51			
427	Modoc Point	12.90				12.90			
431	Warner	46.21					21.42	13.72	11.07
440	Frenchglen	62.00					12.10		49.90
441	Diamond Valley	36.18					11.15	25.03	
442	Princeton-Rome	61.71						24.30	37.41
450	Nyssa-Adrian	20.95				13.00	7.95		
451	Vale-West	10.72				3.76	6.96		
452	Adrian-Parma	2.77				2.77			
453	Adrian-Arena Valley	3.19					3.19		
454	Adrian-Caldwell	4.40					4.40		
455	Homedale Spur	1.95					1.95		
456	I. O. N.	116.80				108.91	2.28		5.61
458	Jordan Valley	10.18				10.18			
	Totals	2,396.47	39.98	148.18	53.75	1,037.40	680.67	179.37	257.12

Table No. 29

MILEAGES OF ROADS OTHER THAN STATE HIGHWAYS

The mileages given here include all local and county roads, Indian service roads, National Park roads and forest development roads. They include both rural and city mileages. They do not include mileages of any primary or secondary state highways. The data have been compiled from mileages reported by the Statewide Highway Planning Survey.

County	Total Mileage in County	Miles of Different Types of Improvement					
		Concrete Pavement	Bitu- minous Pavement	Oiled Surfac- ing	Unolled Surfac- ing	Graded Only	Unim- proved
Baker	1,835	.....	5	19	373	1,062	376
Benton	442	8	10	5	357	52	10
Clackamas	1,690	79	168	143	1,039	200	61
Clatsop	374	29	34	74	113	111	13
Columbia	525	1	17	13	429	44	21
Coos	642	22	10	9	415	66	120
Crook	1,261	.....	.....	.....	60	754	447
Curry	265	.....	.....	.....	101	134	30
Deschutes	2,220	1	5	2	127	1,107	978
Douglas	1,528	15	11	24	884	522	72
Gilliam	567	.....	.....	.....	98	344	125
Grant	1,612	.....	1	.....	135	1,041	435
Harney	2,472	.....	1	.....	62	1,667	742
Hood River	362	2	10	3	153	80	114
Jackson	1,621	6	67	24	512	783	229
Jefferson	949	.....	2	1	117	501	328
Josephine	781	2	10	1	255	368	145
Klamath	2,944	7	55	27	277	1,086	1,492
Lake	2,916	.....	1	.....	139	1,112	1,664
Lane	1,607	32	33	175	873	392	102
Lincoln	391	.....	2	4	185	104	96
Linn	1,286	1	34	55	1,006	161	29
Malheur	2,621	.....	1	1	253	359	2,007
Marion	1,380	65	230	53	893	105	34
Morrow	1,413	.....	.....	4	298	643	468
Multnomah	1,672	177	654	286	408	43	104
Polk	538	2	21	22	427	27	39
Sherman	502	.....	1	.....	98	327	76
Tillamook	345	7	14	4	214	89	17
Umatilla	2,338	.....	19	5	695	1,039	580
Union	1,235	1	10	4	246	708	266
Wallowa	1,304	.....	8	.....	131	825	340
Wasco	1,415	1	12	26	324	864	188
Washington	1,119	5	28	120	774	86	106
Wheeler	537	.....	.....	.....	57	306	174
Yamhill	905	5	43	2	677	110	68
Totals	45,614	468	1,517	1,106	13,205	17,222	12,096

Table No. 30

LIST OF PERSONS RENDERING PROFESSIONAL OR
SPECIAL SERVICES

July 1, 1942, to June 30, 1944

Name and Address	Nature of Service	Compensation
Adams, Bevin & Wyatt, North Bend	House moving estimates	\$ 23.15
Appling, Richard M., Eugene	Court reporting	91.00
Austin, J. R., St. Helens	Witness fees	15.00
Beckwith, John S., Portland	Court reporting	5.00
Beugli, A. E., St. Helens	Land appraisals	15.00
Brandt, A. L., Klamath Falls	Court reporting	252.50
Bratzel, H. J., McMinnville	Court reporting	9.00
Clemens, Ben, Salem	House moving estimates	46.25
Collins, Lee, Depoe Bay	Expert witness service	25.00
Commonwealth, Inc., Portland	Land appraisals	250.00
Dodd, E. F., Hermiston	Land appraisals	20.00
Dryer, H. A., Portland	Land appraisals	150.00
Fletcher, Aubrey L., Nyssa	Land appraisals	150.00
Graham, W. L., Delake	Land appraisals	25.00
Goodnight, V. L., Corvallis	Expert witness service	25.00
Gordon, Herbert, Ocean Lake	Land appraisals	25.00
Griffith, E. A., Hillsboro	Land appraisals	50.00
Groom, Dennis, Milton	House moving estimates	25.00
Hadley, H. B., Klamath Falls	House moving estimates	5.00
Hadley, R. B., Klamath Falls	House moving estimates	36.25
Harding, S. T., Berkeley, Calif.	Consulting engineer service	* 281.21
Hodge, Edwin T., Corvallis	Geologic inspection	† 350.40
Hodges Agency, Pendleton	Land appraisals	25.00
Holbrook, M. C., Portland	Land appraisals	450.00
Holmes, Edwin L., Portland	Court reporting	5.00
Horsman, J. D., Portland	Expert witness service	25.00
Hyde Realty Co., Eugene	Land appraisals	30.00
Ide, W. G., Hillsboro	Land appraisals	75.00
Junor, Geo., Portland	Land appraisals	200.00
Kinney, Frank, Eugene	Land appraisals	15.00
Kuratli, H., Hillsboro	Land appraisals	75.00
Lydiard, J. S., Medford	House moving estimates	15.00
Mains, D. F., Eugene	Land appraisals	10.00
McDaniels, W., Klamath Falls	House moving estimates	5.00
McGowan, F. C., Portland	Land appraisals	700.00
Mills, Geo. W., St. Helens	Land appraisals	15.00
Parsons, R. H. Eugene	Land appraisals	15.00
Portland, City of (J. B. Needham)	Engineering inspection	1,560.25
Powers, Paul B., Portland	Court reporting	15.00
Rusk, Lloyd W., Klamath Falls	House moving estimates	91.50
Rutherford, L. R., St. Helens	Land appraisals	15.00
Stege, Paul, Ocean Lake	Land appraisals	50.00
Stevens & Koon, Portland	Consulting engineer service	250.00
Ulrich Co., J. F., Salem	Land appraisals	15.00
Woodward, Donald, Portland	Land appraisals	700.00

* Includes expense allowance of \$35.51.

† Includes expense allowance of \$25.40.

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